

DELHI PUBLIC SCHOOL, GANDHINAGAR

CH.1 KNOWING OUR NUMBERS

MIND MAP

This chapter consists of five different topics. The most probable questions from the examination point of view are given below.

TYPE: 1 NUMBER SYSTEM:

1. 10 million = Crore
2. Find the sum of the greatest and the least six-digit numbers formed by the digits 2, 0, 4, 7, 6, 5, using each digit only once.
3. Arrange in the ascending order : 1871, 45321, 92547, 88715
4. Insert comma and write the number in Indian and international system in words.
70002509

TYPE: 2 LARGE NUMBERS AND OPERATIONS

1. Chinmay had ₹ 610000. He gave ₹ 87500 to Jyoti, ₹ 126380 to Javed and ₹ 350000 to John. How much money was left with him?
2. A machine, on an average, manufactures 2825 screws a day. How many screws did it produce in the month of January 2006?

TYPE: 3 ESTIMATION

1. Round off each of the following numbers to nearest tens/hundreds/thousands :
2. Estimate the following :
 - (a) $12,904 + 17,986 - 4,317$
 - (b) 19×78

TYPE: 4 BRACKETS

1. Write the expression for the following statements using brackets:
Four multiplied by the sum of five and seven.

TYPE: 5 ROMAN NUMERALS

1. Write the roman – numerals for each of the following:
(a) 95 - (b) 503 –
2. Write the following in Hindu – Arabic numerical
(a) LXIX (b) CCCXXIX

Class –VI Mathematics (Ex. 1.1)

Questions

1. Fill in the blanks:
 - (a) 1 lakh = _____ ten thousand
 - (b) 1 million = _____ hundred thousand
 - (c) 1 crore = _____ ten lakh
 - (d) 1 crore = _____ million
 - (e) 1 million = _____ lakh

 2. Place commas correctly and write the numerals:
 - (a) Seventy-three lakh seventy-five thousand three hundred seven.
 - (b) Nine crore five lakh forty-one.
 - (c) Seven crore fifty-two lakh twenty-one thousand three hundred two.
 - (d) Fifty-eight million four hundred twenty-three thousand two hundred two.
 - (e) Twenty-three lakh thirty thousand ten.

 3. Insert commas suitable and write the names according to Indian system of numeration:
 - (a) 87595762
 - (b) 8546283
 - (c) 99900046
 - (d) 98432701

 4. Insert commas suitable and write the names according to International system of numeration:
 - (a) 78921092
 - (b) 7452283
 - (c) 99985102
 - (d) 48049831
-

Class –VI Mathematics (Ex. 1.1)

Answers

1. (a) 10 (b) 10
(c) 10 (d) 10
(e) 10
 2. (a) 73,75,307 (b) 9,05,00,041
(c) 7,52,21,302 (d) 58,423,202
(e) 23,30,010
 3. (a) 8,75,95,762 → Eight crore seventy-five lakh ninety-five thousand seven hundred sixty-two
(b) 85,46,283 → Eight-five lakh forty-six thousand two hundred eighty-three
(c) 9,99,00,046 → Nine crore ninety-nine lakh forty-six
(d) 9,84,32,701 → Nine crore eighty-four lakh thirty-two thousand seven hundred one
 4. (a) 78,921,092 → Seventy-eight million nine hundred twenty-one thousand ninety-two
(b) 7,452,483 → Seven million four hundred fifty-two thousand two hundred eighty-three
(c) 99,985,102 → Ninety-nine million nine hundred eighty-five thousand one hundred two
(d) 48,049,831 → Forty-eight million forty-nine thousand eight hundred thirty-one
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Class –VI Mathematics (Ex. 1.2)

Questions

1. A book exhibition was held for four days in a school. The number of tickets sold at the counter on the first, second, third and final day was respectively 1094, 1812, 2050 and 2751. Find the total number of tickets sold on all the four days.
 2. Shekhar is a famous cricket player. He has so far scored 6980 runs in test matches. He wishes to complete 10,000 runs. How many more runs does he need?
 3. In an election, the successful candidate registered 5,77,500 votes and his nearest rival secured 3,48,700 votes. By what margin did the successful candidate win the election?
 4. Kirti Bookstore sold books worth ₹ 2,85,891 in the first week of June and books worth ₹ 4,00,768 in the second week of the month. How much was the sale for the two weeks together? In which week was the sale greater and by how much?
 5. Find the difference between the greatest and the least number that can be written using the digits 6, 2, 7, 4, 3 each only once.
 6. A machine, on an average, manufactures 2,825 screws a day. How many screws did it produce in the month of January 2006?
 7. A merchant had ₹ 78,592 with her. She placed an order for purchasing 40 radio sets at ₹ 1,200 each. How much money will remain with her after the purchase?
 8. A student multiplied 7236 by 65 instead of multiplying by 56. By how much was his answer greater than the correct answer?
 9. To stitch a shirt 2 m 15 cm cloth is needed. Out of 40 m cloth, how many shirts can be stitched and how much cloth will remain?
 10. Medicine is packed in boxes, each weighing 4 kg 500 g. How many such boxes can be loaded in a van which cannot carry beyond 800 kg?
 11. The distance between the school and the house of a student's house is 1 km 875 m. Everyday she walks both ways. Find the total distance covered by her in six days.
 12. A vessel has 4 liters and 500 ml of curd. In how many glasses each of 25 ml capacity, can it be filled?
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Class –VI Mathematics (Ex. 1.2)

Answers

1. Number of tickets sold on first day = 1,094
Number of tickets sold on second day = 1,812
Number of tickets sold on third day = 2,050
Number of tickets sold on fourth day = + 2,751
Total tickets sold = 7,707
Therefore, 7,707 tickets were sold on all the four days.
2. Runs to achieve = 10,000
Runs scored = - 6,980
Runs required = 3,020
Therefore, he needs 3,020 more runs.
3. Number of votes secured by successful candidates = 5,77,500
Number of votes secured by his nearest rival = - 3,48,700
Margin between them = 2,28,800
Therefore, the successful candidate won by a margin of 2,28,800 votes.
4. Books sold in first week = 2,85,891
Books sold in second week = + 4,00,768
Total books sold = 6,86,659
Since, 4,00,768 > 2,85,891
Therefore sale of second week is greater than that of first week.
Books sold in second week = 4,00,768
Books sold in first week = - 2,85,891
More books sold in second week = 1,14,877
Therefore, 1,14,877 more books were sold in second week.
5. Greatest five-digit number using digits 6,2,7,4,3 = 76432
Smallest five-digit number using digits 6,2,7,4,3 = - 23467
Difference = 52965
Therefore the difference is 52965.
6. Number of screws manufactured in one day = 2,825
Number of days in the month of January (31 days) = 2,825 x 31
= 87,575
Therefore the machine produced 87,575 screws in the month of January.
-

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7. Cost of one radio = ₹ 1200
 Cost of 40 radios = 1200×40 = ₹ 48,000
 Now, Total money with merchant = ₹ 78,592
 Money spent by her = – ₹ 48,000
 Money left with her = ₹ 30,592
 Therefore, ₹ 30,592 will remain with her after the purchase.

8. Wrong answer = 7236×65 Correct answer = 7236×56
- | | |
|---|---|
| $\begin{array}{r} 7236 \\ \times 65 \\ \hline 36180 \\ 43416 \times \\ \hline 470340 \end{array}$ | $\begin{array}{r} 7236 \\ \times 56 \\ \hline 43416 \\ 36180 \times \\ \hline 405216 \end{array}$ |
|---|---|

Difference in answers = $470340 - 405216$
 = 65,124

9. Cloth required to stitch one shirt = 2 m 15 cm
 = $2 \times 100 \text{ cm} + 15 \text{ cm}$
 = 215 cm
 Length of cloth = 40 m = $40 \times 100 \text{ cm} = 4000 \text{ cm}$
 Number of shirts can be stitched = $4000 \div 215$

$$\begin{array}{r} 18 \\ 215 \overline{) 4000} \\ \underline{- 215} \\ 1850 \\ \underline{- 1720} \\ 130 \end{array}$$

Therefore, 18 shirts can be stitched and 130 cm (1 m 30 cm) cloth will remain.

10. The weight of one box = 4 kg 500 g = $4 \times 1000 \text{ g} + 500 \text{ g} = 4500 \text{ g}$
 Maximum load can be loaded in van = 800 kg = $800 \times 1000 \text{ g} = 800000 \text{ g}$
 Number of boxes = $800000 \div 4500$
-

$$\begin{array}{r}
 177 \\
 4500 \overline{) 800000} \\
 \underline{-4500} \\
 35000 \\
 \underline{-31500} \\
 35000 \\
 \underline{-31500} \\
 3500
 \end{array}$$

Therefore, 177 boxes can be loaded.

11. Distance between school and home = 1.875 km
 Distance between home and school = + 1.875 km
 Total distance covered in one day = 3.750 km
 Distance covered in six days = $3.750 \times 6 = 22.500 \text{ km}$
 Therefore, 22 km 500 m distance covered in six days.

12. Capacity of curd in a vessel = 4 liters 500 ml = $4 \times 1000 \text{ ml} + 500 \text{ ml} = 4500 \text{ ml}$
 Capacity of one glass = 25 ml
 Number of glasses can be filled = $4500 \div 25$

$$\begin{array}{r}
 180 \\
 25 \overline{) 4500} \\
 \underline{-25} \\
 200 \\
 \underline{-200} \\
 0
 \end{array}$$

Therefore, 180 glasses can be filled by curd.

Class -VI Mathematics (Ex. 1.3)

Questions

1. Estimate each of the following using general rule:
 - (a) $730 + 998$
 - (b) $796 - 314$
 - (c) $12,904 + 2,888$
 - (d) $28,292 - 21,496$

 2. Give a rough estimate (by rounding off to nearest hundreds) and also a closer estimate (by rounding off to nearest tens):
 - (a) $439 + 334 + 4317$
 - (b) $1,08,737 - 47,599$
 - (c) $8325 - 491$
 - (d) $4,89,348 - 48,365$

 3. Estimate the following products using general rule:
 - (a) 578×161
 - (b) 5281×3491
 - (c) 1291×592
 - (d) 9250×29
-

Class –VI Mathematics (Ex. 1.3)

Answers

1. (a) 730 round off to 700
998 round off to 1000
Estimated sum = 1700
- (b) 796 round off to 800
314 round off to 300
Estimated sum = 500
- (c) 12904 round off to 13000
2888 round off to 3000
Estimated sum = 16000
- 28292 round off to 28000
21496 round off to 21000
Estimated difference = 7000
2. (a) 439 round off to 400
334 round off to 300
4317 round off to 4300
Estimated sum = 5000
- (b) 108734 round off to 108700
47599 round off to 47600
Estimated difference = 61100
- (c) 8325 round off to 8300
491 round off to 500
Estimated difference = 7800
- (d) 489348 round off to 489300
48365 round off to 48400
Estimated difference = 440900
3. (a) 578×161
578 round off to 600
161 round off to 200
The estimated product = $600 \times 200 = 1,20,000$
- (b) 5281×3491
5281 round of to 5,000
3491 round off to 3,500
The estimated product = $5,000 \times 3,500 = 1,75,00,000$
- (c) 1291×592
1291 round off to 1300
592 round off to 600
The estimated product = $1300 \times 600 = 7,80,000$
- (d) 9250×29
9250 round off to 9000
29 round off to 30
The estimated product = $9,000 \times 30 = 2,70,000$
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DELHI PUBLIC SCHOOL, GANDHINAGAR

CH.2 WHOLE NUMBERS

MIND MAP

This chapter consists of two different topics. The most probable questions from the examination point of view are given below.

TYPE: 1 WHOLE NUMBERS:

1. Smallest whole number
2. Smallest natural number
3. Predecessor/ successor of the given number

TYPE: 2 PROPERTIES OF WHOLE NUMBERS

1. Find using suitable rearrangement.
(a) $15 \times 55 \times 2$ (b) $114 + 217 + 86$
2. Solve using distributive property.
(a) 168×103 (b) $352 \times 55 - 352 \times 5$
3. Fill in the blanks and write the properties used.
(a) $32 \times (27 \times 19) = (32 \times \dots\dots\dots) \times 19$
(b) $125 + (68 + 17) = (125 + \dots\dots\dots) + 17$
(c) $9128 \times \dots\dots\dots = 9128$
(d) $10001 \times 0 = \dots\dots\dots$
(e) $2395 + \dots\dots\dots = 6195 + 2395$

Ch.2 Whole Numbers

Class –VI Mathematics (Ex. 2.1)

Questions

1. Write the next three natural numbers after 10999.
2. Write the three whole numbers occurring just before 10001.
3. Which is the smallest whole number?
4. How many whole numbers are there between 32 and 53?
5. Write the successor of:
(a) 2440701 (b) 100199 (c) 1099999 (d) 2345670
6. Write the predecessor of:
(a) 94 (b) 10000 (c) 208090 (d) 7654321
7. In each of the following pairs of numbers, state which whole number is on the left of the other number on the number line. Also write them with the appropriate sign ($>$, $<$) between them.
(a) 530, 503 (b) 370, 307
(c) 98765, 56789 (d) 9830415, 10023001
8. Which of the following statements are true (T) and which are false (F):
(a) Zero is the smallest natural number.
(b) 400 is the predecessor of 399.
(c) Zero is the smallest whole number.
(d) 600 is the successor of 599.
(e) All natural numbers are whole numbers.
(f) All whole numbers are natural numbers.
(g) The predecessor of a two digit number is never a single digit number.
(h) 1 is the smallest whole number.
(i) The natural number 1 has no predecessor.
(j) The whole number 1 has no predecessor.
(k) The whole number 13 lies between 11 and 12.
(l) The whole number 0 has no predecessor.
(m) The successor of a two digit number is always a two digit number.

Class -VI Mathematics (Ex. 2.1)

Answers

1. $10,999 + 1 = 11,000$
 $11,000 + 1 = 11,001$
 $11,001 + 1 = 11,002$
 2. $10,001 - 1 = 10,000$
 $10,000 - 1 = 9,999$
 $9,999 - 1 = 9,998$
 3. '0' (zero) is the smallest whole number.
 4. $53 - 32 - 1 = 20$
There are 20 whole numbers between 32 and 53.
 5. (a) Successor of 2440701 is $2440701 + 1 = 2440702$
(b) Successor of 100199 is $100199 + 1 = 100200$
(c) Successor of 1099999 is $1099999 + 1 = 1100000$
(d) Successor of 2345670 is $2345670 + 1 = 2345671$
 6. (a) The predecessor of 94 is $94 - 1 = 93$
(b) The predecessor of 10000 is $10000 - 1 = 9999$
(c) The predecessor of 208090 is $208090 - 1 = 208089$
(d) The predecessor of 7654321 is $7654321 - 1 = 7654320$
 7. (a) $530 > 503$; So 503 appear on left side of 530 on number line.
(b) $370 > 307$; So 307 appear on left side of 370 on number line.
(c) $98765 > 56789$; So 56789 appear on left side of 98765 on number line.
(d) $9830415 < 10023001$; So 9830415 appear on left side of 10023001 on number line.
 8. (a) False (b) False (c) True (d) True
(e) True (f) False (g) False (h) False
(i) True (j) False (k) False (l) True
(m) False
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Class –VI Mathematics (Ex. 2.2)

Questions

1. Find the sum by suitable rearrangement:
(a) $837 + 208 + 363$ (b) $1962 + 453 + 1538 + 647$
2. Find the product by suitable arrangement:
(a) $2 \times 1768 \times 50$ (b) $4 \times 166 \times 25$
(c) $8 \times 291 \times 125$ (d) $625 \times 279 \times 16$
(e) $285 \times 5 \times 60$ (f) $125 \times 40 \times 8 \times 25$
3. Find the value of the following:
(a) $297 \times 17 + 297 \times 3$
(b) $54279 \times 92 + 8 \times 54279$
(c) $81265 \times 169 - 81265 \times 69$
(d) $3845 \times 5 \times 782 + 769 \times 25 \times 218$
4. Find the product using suitable properties:
(a) 738×103 (b) 854×102
(c) 258×1008 (d) 1005×168
5. A taxi-driver, filled his car petrol tank with 40 liters of petrol on Monday. The next day, he filled the tank with 50 liters of petrol. If the petrol costs ₹ 44 per liter, how much did he spend in all on petrol?
6. A vendor supplies 32 liters of milk to a hotel in a morning and 68 liters of milk in the evening. If the milk costs ₹ 15 per liter, how much money is due to the vendor per day?
7. Match the following:
(i) $425 \times 136 = 425 \times (6 + 30 + 100)$ (a) Commutativity under multiplication
(ii) $2 \times 48 \times 50 = 2 \times 50 \times 49$ (b) Commutativity under addition
(iii) $80 + 2005 + 20 = 80 + 20 + 2005$ (c) Distributivity multiplication under addition

Class -VI Mathematics (Ex. 2.2)

Answers

- | | |
|--|--|
| <p>1. (a) $837 + 208 + 363$ $= (837 + 363) + 208$ $= 1200 + 208$ $= 1408$</p> <p>2. (a) $2 \times 1768 \times 50$ $= (2 \times 50) \times 1768$ $= 100 \times 1768$ $= 176800$</p> <p>(c) $8 \times 291 \times 125$ $= (8 \times 125) \times 291$ $= 1000 \times 291$ $= 291000$</p> <p>(e) $285 \times 5 \times 60$ $= 284 \times (5 \times 60)$ $= 284 \times 300$ $= 85500$</p> <p>3. (a) $297 \times 17 + 297 \times 3$ $= 297 \times (17 + 3)$ $= 297 \times 20$ $= 5940$</p> <p>(c) $81265 \times 169 - 81265 \times 69$ $= 81265 \times (169 - 69)$ $= 81265 \times 100$ $= 8126500$</p> <p>4. (a) 738×103 $= 738 \times (100 + 3)$ $= 738 \times 100 + 738 \times 3$ $= 73800 + 2214$ $= 76014$</p> <p>(c) 258×1008 $= 258 \times (1000 + 8)$ $= 258 \times 1000 + 258 \times 8$</p> | <p>(b) $1962 + 453 + 1538 + 647$ $= (1962 + 1538) + (453 + 647)$ $= 3500 + 1100$ $= 4600$</p> <p>(b) $4 \times 166 \times 25$ $= (4 \times 25) \times 166$ $= 100 \times 166$ $= 16600$</p> <p>(b) $625 \times 279 \times 16$ $= (625 \times 16) \times 279$ $= 10000 \times 279$ $= 2790000$</p> <p>(f) $125 \times 40 \times 8 \times 25$ $= (125 \times 8) \times (40 \times 25)$ $= 1000 \times 1000$ $= 1000000$</p> <p>(b) $54279 \times 92 + 8 \times 542379$ $= 54279 \times (92 + 8)$ $= 54279 \times 100$ $= 5427900$</p> <p>(d) $3845 \times 5 \times 782 + 769 \times 25 \times 218$ $= 3845 \times 5 \times 782 + 769 \times 5 \times 5 \times 218$ $= 3845 \times 5 \times 782 + 3845 \times 5 \times 218$ $= 3845 \times 5 \times (782 + 218)$ $= 3845 \times 5 \times 1000$ $= 19225000$</p> <p>(b) 854×102 $= 854 \times (100 + 2)$ $= 854 \times 100 + 854 \times 2$ $= 85400 + 1708$ $= 87108$</p> <p>(d) 1005×168 $= (1000 + 5) \times 168$ $= 1000 \times 168 + 5 \times 168$</p> |
|--|--|
-

$$= 258000 + 2064$$

$$= 260064$$

$$= 168000 + 840$$

$$= 168840$$

5. Petrol filled on Monday = 40 liters

Petrol filled on next day = 50 liters

Total petrol filled = 90 liters

Now, Cost of 1 liter petrol = ₹ 44

Cost of 90 liters petrol = 44×90

$$= 44 \times (100 - 10)$$

$$= 44 \times 100 - 44 \times 10$$

$$= 4400 - 440$$

$$= ₹ 3960$$

Therefore, he spent ₹ 3960 on petrol.

6. Supply of milk in morning = 32 liters

Supply of milk in evening = 68 liters

Total supply = $32 + 68 = 100$ liters

Now Cost of 1 liter milk = ₹ 15

Cost of 100 liters milk = $15 \times 100 = ₹ 1500$

Therefore, ₹ 1500 is due to the vendor per day.

7. (i) $425 \times 136 = 425 \times (6 + 30 + 100)$

(c) Distributivity of multiplication over addition

(ii) $2 \times 49 \times 50 = 2 \times 50 \times 49$

(a) Commutivity under multiplication

(iii) $80 + 2005 + 20 = 80 + 20 + 2005$

(b) Commutivity under addition

Class -VI Mathematics (Ex. 2.3)

Questions

1. Which of the following will not represent zero:
(a) $1 + 0$ (b) 0×0
(c) $\frac{0}{2}$ (d) $\frac{10-10}{2}$
2. If the product of two whole numbers is zero, can we say that one or both of them will be zero? Justify through examples.
3. If the product of two whole number is 1, can we say that one or both of them will be 1? Justify through examples.
4. Find using distributive property:
(a) 728×101 (b) 5437×1001
(c) 824×25 (d) 4275×125
(e) 504×35
5. Study the pattern:
 $1 \times 8 + 1 = 9;$ $12 \times 8 + 2 = 98;$ $123 \times 8 + 3 = 987$
 $1234 \times 8 + 4 = 9876;$ $12345 \times 8 + 5 = 98765$
Write the next two steps. Can you say how the pattern works?

Class -VI Mathematics (Ex. 2.3)

Answers

1. (a) $[1 + 0 \text{ is equal to } 1]$
 2. Yes, if we multiply any number with zero the resultant product will be zero.
Example: $2 \times 0 = 0, 5 \times 0 = 0, 9 \times 0 = 0$
If both numbers are zero, then the result also be zero.
 $0 \times 0 = 0$
 3. If only one number be 1 then the product cannot be 1.
Examples: $5 \times 1 = 5, 4 \times 1 = 4, 8 \times 1 = 8$
If both number are 1, then the product is 1
 $1 \times 1 = 1$
 4. (a) 728×101
 $= 728 \times (100 + 1)$
 $= 728 \times 100 + 728 \times 1$
 $= 72800 + 728$
 $= 73528$
(b) 5437×1001
 $= 5437 \times (1000 + 1)$
 $= 5437 \times 1000 + 5437 \times 1$
 $= 5437000 + 5437$
 $= 5442437$
(c) 824×25
 $= 824 \times (20 + 5)$
 $= 824 \times 20 + 824 \times 5$
 $= 16480 + 4120$
 $= 20600$
(d) 4275×125
 $= 4275 \times (100 + 20 + 5)$
 $= 4275 \times 100 + 4275 \times 20 + 4275 \times 5$
 $= 427500 + 85500 + 21375$
 $= 534375$
(e) 504×35
 $= (500 + 4) \times 35$
 $= 500 \times 35 + 4 \times 35$
 $= 17500 + 140$
 $= 17640$
 5. $123456 \times 8 + 6 = 987654$
 $1234567 \times 8 + 7 = 9876543$
Pattern works like this:
 $1 \times 8 + 1 = 9$
 $12 \times 8 + 2 = 98$
 $123 \times 8 + 3 = 987$
 $1234 \times 8 + 4 = 9876$
 $12345 \times 8 + 5 = 98765$
 $123456 \times 8 + 6 = 987654$
 $1234567 \times 8 + 7 = 9876543$
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**DELHI PUBLIC SCHOOL
GANDHINAGAR**

Welcome

to the

Online Virtual Class

Do's & Don'ts

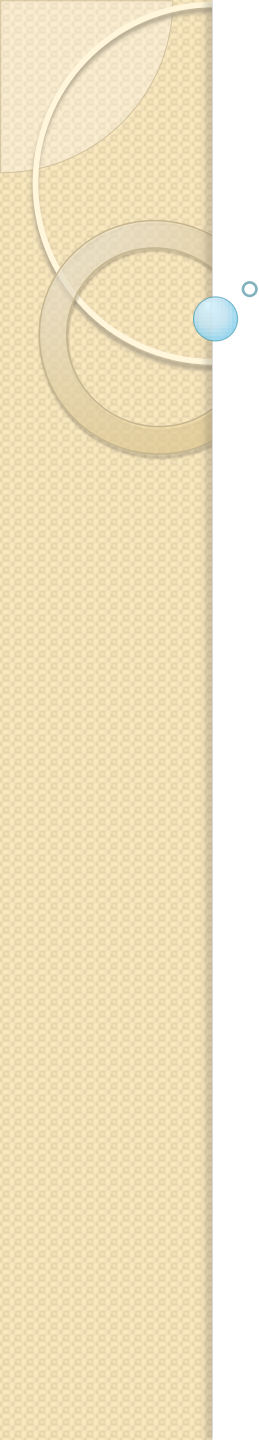
- *Student must keep a notepad and pen to make notes.*
- *Students are not allowed to unmute the audio. You will get two minutes at last to solve your query.*
- *Students to enter their name while entering the meeting room and they are not allowed to mute video.*
- *Don't waste your time in changing your profile video background. Everyone knows that you are expert in technology, no need to prove. Its better to concentrate in class.*
- *Screen sharing and scribbling is not allowed at any cost.*
- *Discipline and decorum to be maintained.*
- *These classes once completed online, will not be repeated again in actual class room. Hence, pay attention and don't be absent.*



Chapter 2

Whole Numbers

Topics to be covered

- 
1. Whole Numbers
 2. Number Line
 3. Properties of whole numbers
 4. Word Problems

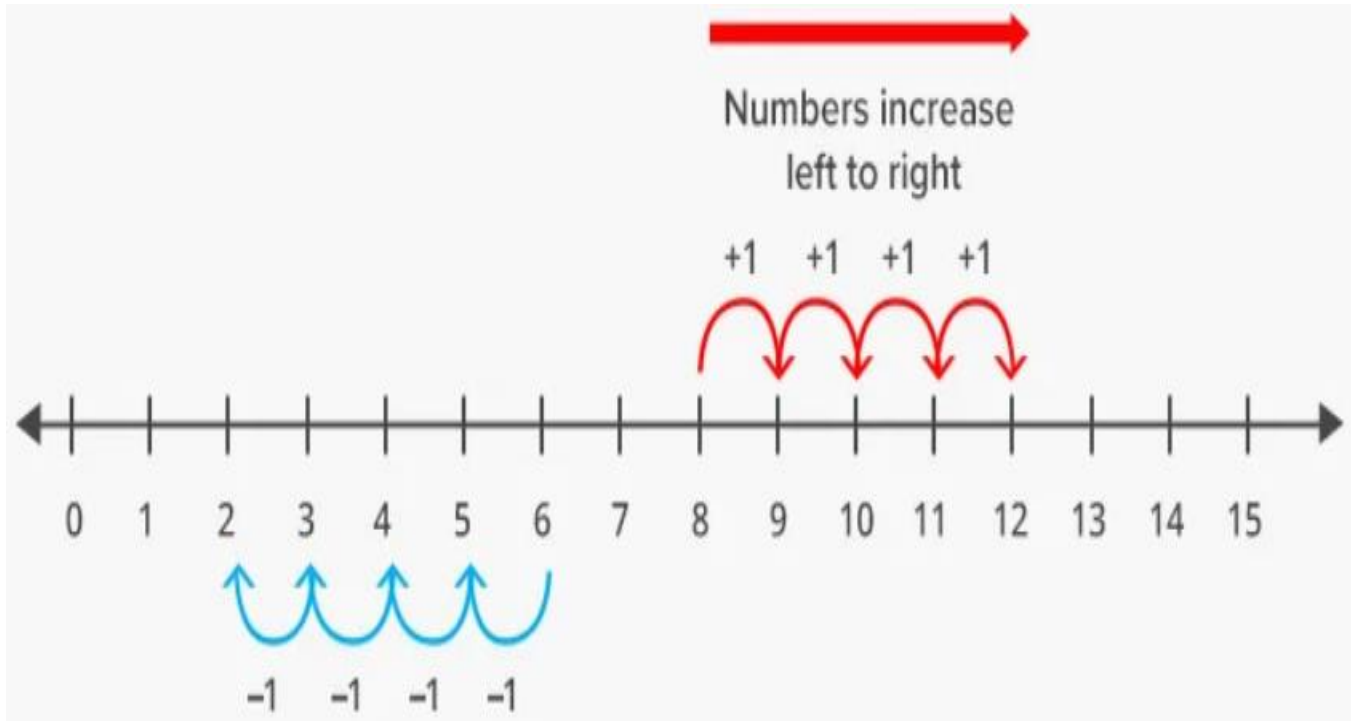
What are whole numbers?

- Natural numbers are called counting numbers like 1,2,3,4... etc
- The natural numbers along with ZERO form the collection of whole numbers.
- ✓ Smallest natural number is 1.
- ✓ Smallest whole number is 0.

Successor and Predecessor

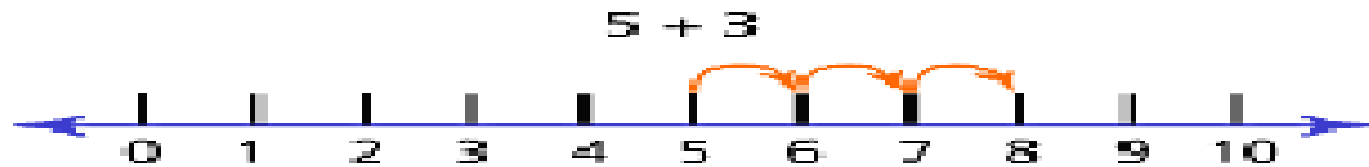
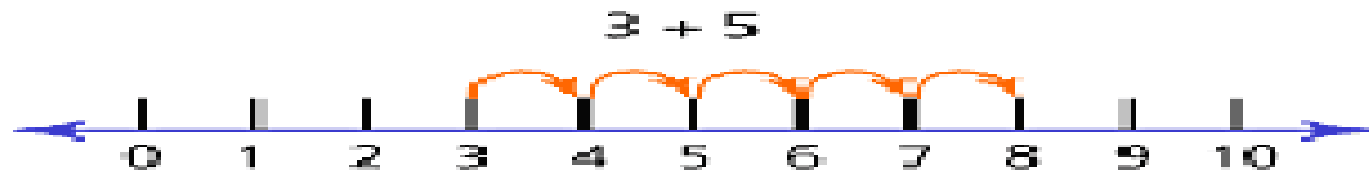
- Given any natural number, when we add one(1) to it ,we get its *successor*.
- Example $567438 + 1 = 567439$
- Given any natural number, when we subtract one(1) from it ,we get its *predecessor*.
- Example $567438 - 1 = 567437$

Whole numbers on the number line.



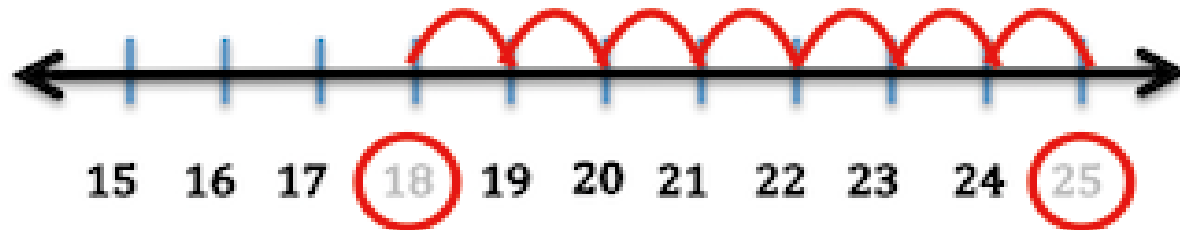
Addition on the number line

To add on the number line, move towards right side of the number line.



Subtraction on the number line

To subtract on the number line , move towards the left side of the number line.



$$25 - 7 = 18$$

Difference Between Whole Numbers & Natural Numbers

| Whole Numbers | Natural Numbers |
|--|---|
| Whole Numbers: {0, 1, 2, 3, 4, 5, 6,.....} | Natural Numbers: {1, 2, 3, 4, 5, 6,.....} |
| Counting starts from 0 | Counting starts from 1 |
| All whole numbers are not natural numbers | All Natural numbers are whole numbers |

Home Assignment

1. Draw a number line and mark 4 & 9 on it.
2. Add the following on the number line
 - (a) $4 + 7$
 - (b) $6 + 3$
3. Subtract the following on the number line
 - (a) $11 - 7$
 - (b) $5 - 3$

Exercise. 2.1

- **1. Write the next three natural numbers after 10999.**

Solutions:

The next three numbers after 10999 are 11000, 11001 and 11002

- **2. Write the three whole numbers occurring just before 10001.**

Solutions:

The three whole numbers occurring just before 10001 are 10000, 9999 and 9998

- **3. Which is the smallest whole number?**

Solutions:

The smallest whole number is 0.

5. Write the successor of:

(a) 2440701 (b) 100199 (c) 1099999 (d) 2345670

Solutions:

The successors are

(a) $2440701 + 1 = 2440702$

(b) $100199 + 1 = 100200$

(c) $1099999 + 1 = 1100000$

(d) $2345670 + 1 = 2345671$

6. Write the predecessor of:

(a) 94 (b) 10000 (c) 208090 (d) 7654321

Solutions:

The predecessors are

(a) $94 - 1 = 93$

(b) $10000 - 1 = 9999$

(c) $208090 - 1 = 208089$

(d) $7654321 - 1 = 7654320$

7. In each of the following pairs of numbers, state which whole number is on the left of the other number on the number line. Also write them with the appropriate sign ($>$, $<$) between them.

(a) 530, 503

(b) 370, 307

(c) 98765, 56789

(d) 9830415, 10023001

Solutions:

- (a) Since, $530 > 503$

Hence, 503 is on the left side of 530 on the number line.

- (b) Since, $370 > 307$

Hence, 307 is on the left side of 370 on the number line.

- (c) Since, $98765 > 56789$

Hence, 56789 is on the left side of 98765 on the number line.

- (d) Since, $9830415 < 10023001$

Hence, 9830415 is on the left side of 10023001 on the number line.

8. Which of the following statements are true (T) and which are false (F) ?

- (a) Zero is the smallest natural number.
- (b) 400 is the predecessor of 399.
- (c) Zero is the smallest whole number.
- (d) 600 is the successor of 599.
- (e) All natural numbers are whole numbers.
- (f) All whole numbers are natural numbers.
- (g) The predecessor of a two digit number is never a single digit number.
- (h) 1 is the smallest whole number.
- (i) The natural number 1 has no predecessor.
- (j) The whole number 1 has no predecessor.
- (k) The whole number 13 lies between 11 and 12.
- (l) The whole number 0 has no predecessor.
- (m) The successor of a two digit number is always a two digit number.

8. Which of the following statements are true (T) and which are false (F)?

(a) Zero is the smallest natural number.

Solution : False

0 is not a natural number

(b) 400 is the predecessor of 399.

Solution : False

The predecessor of 399 is 398 Since, $(399 - 1 = 398)$

(c) Zero is the smallest whole number.

Solution : True

(d) 600 is the successor of 599.

Solution : True

Since $(599 + 1 = 600)$

(f) All whole numbers are natural numbers.

Solution : False

0 is a whole number but is not a natural number

(h) 1 is the smallest whole number.

Solution : False

0 is the smallest whole number

(i) The natural number 1 has no predecessor.

Solution : True

The predecessor of 1 is 0 but is not a natural number

Properties of Whole Numbers

1. Closure Property
 2. Commutative Property
 3. Associative Property
 4. Distributive Property
-
- Additive Identity & Multiplicative Identity
 - Property of Zero

Closure Property

Whole numbers are closed for addition and multiplication but not for subtraction and division.

For two whole numbers 'a' and 'b',

$$a + b = \text{a whole number}$$

i.e. Sum of two whole numbers is always a whole number

$$a - b = \text{May or may not be a whole number}$$

i.e. Difference of two whole numbers may be a whole number may not be a whole number



$a \times b =$ a whole number

i.e. Product of two whole numbers is a whole number

$a \div b =$ May or may not be a whole number

i.e. Division of two whole numbers may be a whole number may not be a whole number

i.e. Closure property holds true for addition and multiplication but does not hold true for subtraction and division.

Example

For $a = 2$ and $b = 5$

- Addition : $2 + 5 = 7 \rightarrow$ whole number.
- Subtraction : $2 - 5 = ?$ (Will it be a whole number ?)
- Multiplication : $2 \times 5 = 10 \rightarrow$ whole number.
- Division : $2 \div 5 = \frac{2}{5} \rightarrow$ a fraction(not a whole number)



Home Assignment :

Check closure property for addition, subtraction, multiplication and division for

(i) $a = 6$ and $b = 3$

(ii) $a = 20$ and $b = 15$

Commutative Property

i.e Changing order of numbers

For two whole numbers 'a' and 'b',

$$a + b = b + a$$

$$a - b \neq b - a$$

$$a \times b = b \times a$$

$$a \div b \neq b \div a$$

i.e. Commutative property holds true for addition and multiplication but does not hold true for subtraction and division.

Examples

- **For addition :**

$$3 + 5 = 8 \text{ and } 5 + 3 = 8 \text{ i.e. } 3 + 5 = 5 + 3$$

- **For subtraction :**

$$6 - 4 = 2 \text{ but } 4 - 6 \neq 2 \text{ i.e. } 6 - 4 \neq 4 - 6$$

- **For multiplication :**

$$2 \times 5 = 10 \text{ and } 5 \times 2 = 10 \text{ i.e. } 2 \times 5 = 5 \times 2$$

- **For division :**

$$8 \div 4 = 2 \text{ but } 4 \div 8 \neq 2 \text{ i.e. } 8 \div 4 \neq 4 \div 8$$

Associative Property

i.e. Changing order of bracket

For three whole numbers 'a', 'b' and 'c',

$$(a + b) + c = a + (b + c)$$

$$(a - b) - c \neq a - (b - c)$$

$$(a \times b) \times c = a \times (b \times c)$$

$$(a \div b) \div c \neq a \div (b \div c)$$

Associative property holds true for addition and multiplication but does not hold true for subtraction and division.

Examples

For addition ($a = 2, b = 3, c = 4$)

$$(2 + 3) + 4 = 5 + 4 = 9$$

and $2 + (3 + 4) = 2 + 7 = 9$

i.e. $(2 + 3) + 4 = 2 + (3 + 4)$

For subtraction ($a = 5, b = 4, c = 1$)

$$(5 - 4) - 1 = 1 - 1 = 0$$

But $5 - (4 - 1) = 5 - 3 = 2$

i.e. $(5 - 4) - 1 \neq 5 - (4 - 1)$

For multiplication ($a = 6, b = 5, c = 3$)

$$(6 \times 5) \times 3 = 30 \times 3 = 90$$

And $6 \times (5 \times 3) = 6 \times 15 = 90$

i.e. $(6 \times 5) \times 3 = 6 \times (5 \times 3)$

For division ($a = 16, b = 4, c = 2$)

$$(16 \div 4) \div 2 = 4 \div 2 = 2$$

But $16 \div (4 \div 2) = 16 \div 2 = 8$

i.e. $(16 \div 4) \div 2 \neq 16 \div (4 \div 2)$

Example 2 :

Find $14 + 17 + 6$ in two ways.

Way 1. $14 + 17 + 6$

$$= 14 + (17 + 6)$$

$$= 31 + 6$$

$$= 37$$

Way 2. $14 + 17 + 6$

$$= (14 + 17) + 6$$

$$= 31 + 6$$

$$= 37$$

Way 3. $14 + 17 + 6$

$$= 14 + 6 + 17 \text{ (using commutative property/rearrangement)}$$

$$= (14 + 6) + 17$$

$$= 20 + 17$$

$$= 37$$

Home Assignment

1) *Add the numbers 234,
197 and 103*

2) *Find $8 \times 1769 \times 125$*

Home Assignment

1) *Add the numbers 234, 197 and 103*

$$234 + 197 + 103$$

$$= 234 + (197 + 103)$$

$$= 234 + 300$$

$$= 534$$

2) *Find $8 \times 1769 \times 125$*

$$8 \times 1769 \times 125$$

$$= 1769 \times 8 \times 125$$

$$= 1769 \times (8 \times 125)$$

$$= 1769 \times 1000$$

$$= 1769000$$

Distributive Property

- If a , b and c are three whole numbers then

Distributive property of multiplication over addition is

$$a \times (b + c) = (a \times b) + (a \times c)$$

$$\text{OR } (a \times b) + (a \times c) = a \times (b + c)$$

Distributive property of multiplication over subtraction is

$$a \times (b - c) = (a \times b) - (a \times c)$$

$$\text{OR } (a \times b) - (a \times c) = a \times (b - c)$$

Example : Solve using distributive property

(a) $3 \times (8 + 2)$

(b) $5 \times (8 - 2)$

(a) $3 \times (8 + 2)$

By applying Distributive Property we get

$$= (3 \times 8) + (3 \times 2)$$

$$= 24 + 6$$

$$= 30$$

Now verify your answer by Using BODMAS

$$3 \times (8 + 2)$$

$$= 3 \times 10$$

$$= 30$$

(b) $5 \times (8 - 2)$

$$= (5 \times 8) - (5 \times 2)$$

$$= 40 - 10$$

$$= 30$$

Other ways to use distributive property

Example 6 : Find 12×35 using distributivity.

Solution :

$$\begin{aligned} &12 \times 35 \\ &= 12 \times (30 + 5) \\ &= (12 \times 30) + (12 \times 5) \\ &= 360 + 60 \\ &= 420 \end{aligned}$$

Example 7 : Simplify: $(126 \times 55) + (126 \times 45)$

Solution :

$$\begin{aligned} &(126 \times 55) + (126 \times 45) \\ &= 126 \times (55 + 45) \\ &= 126 \times 100 \\ &= 12600. \end{aligned}$$

Home Assignment

Exercise – 2.3

Find using distributive property :

(a) 728×101

(b) 5437×1001

(c) 824×25

(d) 4275×125

(e) 504×35

$$\begin{aligned}(a) \quad & 728 \times 101 \\ &= 728 \times (100 + 1) \\ &= (728 \times 100) + (728 \times 1) \\ &= 72800 + 728 \\ &= 73528\end{aligned}$$

$$\begin{aligned}(c) \quad & 824 \times 25 \\ &= 824 \times (20 + 5) \\ &= (824 \times 20) + (824 \times 5) \\ &= 16480 + 4120 \\ &= 20600\end{aligned}$$

$$\begin{aligned}(d) \quad & 4275 \times 125 \\ &= 4275 \times (100 + 20 + 5) \\ &= (4275 \times 100) + (4275 \times 20) + (4275 \times 5) \\ &= 427500 + 85500 + 21375 \\ &= 534375\end{aligned}$$

$$\begin{aligned}(b) \quad & 5437 \times 1001 \\ &= 5437 \times (1000 + 1) \\ &= (5437 \times 1000) + (5437 \times 1) \\ &= 5437000 + 5437 \\ &= 5442437\end{aligned}$$

$$\begin{aligned}(e) \quad & 504 \times 35 \\ &= (500 + 4) \times 35 \\ &= (500 \times 35) + (4 \times 35) \\ &= 17500 + 140 \\ &= 17640\end{aligned}$$

❖ Identity :

➤ **Additive Identity :**

‘Zero’ is called additive identity, as adding zero to any whole number does not change the value of that number.

$$\text{i.e. } a + 0 = a$$

➤ **Multiplicative Identity :**

‘One’ is called multiplicative identity

$$a \times 1 = a$$

❖ Property of Zero

➤ $0 + a = a \text{ and } a + 0 = a$

➤ $0 \times a = 0 \text{ and } a \times 0 = 0$

➤ $0 \div a = 0 \text{ and } a \div 0 = \text{????}$

❖ Division by zero :

Division means repeated subtraction :

Eg. $8 \div 2$

$$8 - 2 = 6 \text{ - - - - - (step-1)}$$

$$6 - 2 = 4 \text{ - - - - - (step-2)}$$

$$4 - 2 = 2 \text{ - - - - - (step-3)}$$

$$2 - 2 = 0 \text{ - - - - - (step-4)}$$

$$\Rightarrow 8 \div 2 = 4$$

Now try, $2 \div 0$

$$2 - 0 = 2 \text{ - - - - - (step-1)}$$

$$2 - 0 = 2 \text{ - - - - - (step-2)}$$

$$2 - 0 = 2 \text{ - - - - - (step-3)}$$

$$2 - 0 = 2 \text{ - - - - - (step-4)}$$

$$\therefore 2 \div 0 = \textit{infinite/not defined}$$

Exercise - 2.2

1. Find the sum by suitable rearrangement:

(a) $837 + 208 + 363$

(b) $1962 + 453 + 1538 + 647$

Solutions:

(a) Given $837 + 208 + 363$

$$= (837 + 363) + 208$$

$$= 1200 + 208$$

$$= 1408$$

(b) Given $1962 + 453 + 1538 + 647$

$$= (1962 + 1538) + (453 + 647)$$

$$= 3500 + 1100$$

$$= 4600$$

2. Find the product by suitable rearrangement:

(a) $2 \times 1768 \times 50$ (b) $4 \times 166 \times 25$ (c) $8 \times 291 \times 125$

(d) $625 \times 279 \times 16$ (e) $285 \times 5 \times 60$ (f) $125 \times 40 \times 8 \times 25$

Solutions:

(a) Given $2 \times 1768 \times 50$

$$= 2 \times 50 \times 1768$$

$$= 100 \times 1768$$

$$= 176800$$

(f) Given $125 \times 40 \times 8 \times 25$

$$= (125 \times 8) \times (40 \times 25)$$

$$= 1000 \times 1000$$

$$= 10,00,000$$

Home Assignment :


Find the product by suitable rearrangement:

(b) $4 \times 166 \times 25$

(c) $8 \times 291 \times 125$

(d) $625 \times 279 \times 16$

(e) $285 \times 5 \times 60$



(b) Given $4 \times 166 \times 25$
 $= 4 \times 25 \times 166$
 $= 100 \times 166$
 $= 16600$

(c) Given $8 \times 291 \times 125$
 $= 8 \times 125 \times 291$
 $= 1000 \times 291$
 $= 291000$

(d) Given $625 \times 279 \times 16$
 $= 279 \times 625 \times 16$
 $= 279 \times 10000$
 $= 2790000$

(e) Given $285 \times 5 \times 60$
 $= 285 \times 300$
 $= 85500$

3. Find the value of the following:

(a) $297 \times 17 + 297 \times 3$

(b) $54279 \times 92 + 8 \times 54279$

(c) $81265 \times 169 - 81265 \times 69$

(d) $3845 \times 5 \times 782 + 769 \times 25 \times 218$

Solution :

(a) $297 \times 17 + 297 \times 3$

$$= 297 \times (17 + 3)$$

$$= 297 \times 20$$

$$= 5940$$

(c) $81265 \times 169 - 81265 \times 69$

$$= 81265 \times (169 - 69)$$

$$= 81265 \times 100$$

$$= 8126500$$

(d) $3845 \times 5 \times 782 + 769 \times 25 \times 218$

$$= 19225 \times 782 + 19225 \times 218$$

$$= 19225 \times (782 + 218)$$

$$= 19225 \times 1000$$

$$= 19225000$$

4. Find the product using suitable properties.

(a) 738×103

(b) 854×102

(c) 258×1008

(d) 1005×168

(a) 738×103

$$= 738 \times (100 + 3)$$

$$= (738 \times 100) + (738 \times 3) \text{ (using distributive property)}$$

$$= 73800 + 2214$$

$$= 76014$$

(b) 854×102

$$= 854 \times (100 + 2)$$

$$= (854 \times 100) + (854 \times 2)$$

$$= 85400 + 1702$$

$$= 87102$$

(c) 258×1008

$$= 258 \times (1000 + 8)$$

$$= (258 \times 1000) + (258 \times 8)$$

$$= 258000 + 2064$$

$$= 287064$$

(d) 1005×168

$$= (1000 + 5) \times 168$$

$$= (1000 \times 168) + (5 \times 168)$$

$$= 168000 + 840$$

$$= 168840$$

5. A taxi driver filled his car petrol tank with 40 litres of petrol on Monday. The next day, he filled the tank with 50 litres of petrol. If the petrol costs ₹ 44 per litre, how much did he spend in all on petrol?

Solutions:

Petrol quantity filled on Monday = 40 litres

Petrol quantity filled on Tuesday = 50 litres

Total petrol quantity filled = (40 + 50) litre

Cost of petrol per litre = ₹ 44

Total money spent = ₹ 44 × (40 + 50)

$$= ₹ 44 \times 90$$

$$= ₹ 3960$$

Ans : Taxi driver spent ₹3960 in all on petrol.

Home Assignment

A vendor supplies 32 litres of milk to a hotel in the morning and 68 litres of milk in the evening. If the milk costs ₹ 45 per litre, how much money is due to the vendor per day?

Exercise - 2.3

1. Which of the following will not represent zero:

(a) $1 + 0$

(b) 0×0

(c) $\frac{0}{2}$

(d) $\frac{10-10}{2}$

2. If the product of two whole numbers is zero, can we say that one or both of them will be zero? Justify through examples.

Solutions:

If product of two whole numbers is zero, definitely one of them is zero

Example: $0 \times 3 = 0$ and $15 \times 0 = 0$

If product of two whole numbers is zero, both of them may be zero

Example: $0 \times 0 = 0$

Ans : Yes, if the product of two whole numbers is zero, then one both of them will be zero

3. If the product of two whole numbers is 1, can we say that one or both of them will be 1? Justify through examples.

Solutions:

If the product of two whole numbers is 1,
both the numbers should be equal to 1

Example: $1 \times 1 = 1$

But $1 \times 5 = 5$

Hence, its clear that the product of two
whole numbers will be 1, only in situation
when both numbers to be multiplied are 1

Quiz

1. Which Natural number does not have predecessor ?
2. Write the smallest 6-digit number that can be formed by the digits 7, 6, 0, 5, 8, 0.
3. Write two consecutive predecessors of 60010.
4. **Fill up the following:**
 - (i) Division by _____ is not defined.
 - (ii) A number remains unchanged when added to _____.
 - (iii) A number remains unchanged when multiplied to _____.
 - (iv) $13 \times 100 \times \underline{\hspace{2cm}} = 1300000$

5. Match the following

| Column A | Column B |
|--------------------------------|--|
| 1. Commutative property | a. $(a \times b) \times c = a \times (b \times c)$ |
| 2. Associative Property | b. $a(b + c) = ab + ac$ |
| 3. Identity for multiplication | c. $a + b = b + a$ |
| 4. Distributive Property | d. $a \times 1 = a$ |

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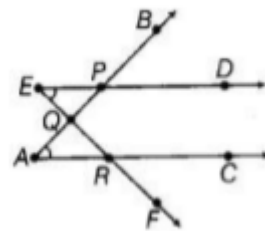
CHAPTER 4: BASIC GEOMETRICAL IDEAS

MIND MAP

This chapter consists of three different topics. The most probable questions from the examination point of view are given below.

TYPE: 1

1. Define the following terms:
 - a) Line segment
 - b) Line.
 - c) Intersecting lines.
 - d) Parallel lines
2. From the given figure identify:
 - a) Points. b) Line c) Line segment e) Parallel lines.
 - f) Intersecting lines. g) Ray
3. How many end points a line segment have?

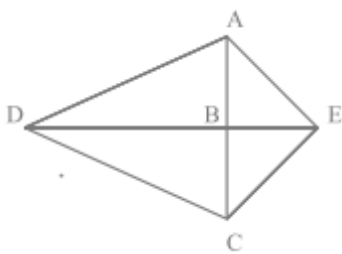


TYPE: 2

1. Draw rough diagrams to illustrate the following:
 - a. Open curve.
 - b. Closed curve.

TYPE: 3

1. How many right angles are present in below figure and also name them.



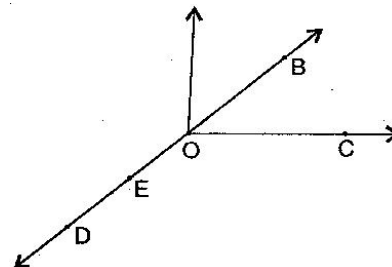
2. If the sum of two angles is equal to an obtuse angle, then which of the following is not possible?
 - (A) One obtuse angle and one acute angle.
 - (B) One right angle and one acute angle.
 - (C) Two acute angles.
 - (D) Two right angles.

Class –VI Mathematics (Ex. 4.1)

Questions

1. Use the figure to name:

- (a) Five points
- (b) A line
- (c) Four rays
- (d) Five line segments

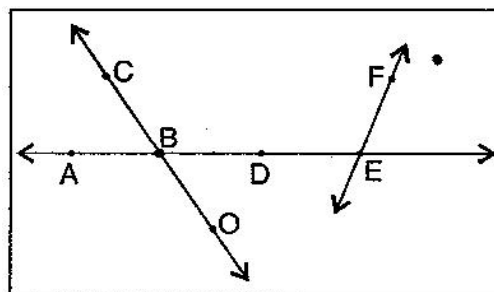


2. Name the line given in all possible (twelve) ways, choosing only two letters at a time from the four given.



3. Use the figure to name:

- (a) Line containing point E.
- (b) Line passing through A.
- (c) Line on which O lies.
- (d) Two pairs of intersecting lines.



4. How many lines can pass through:

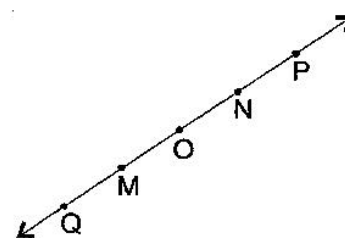
- (a) one given point?
- (b) two given points

5. Draw a rough figure and label suitably in each of the following cases:

- (a) Point P lies on \overline{AB} .
- (b) \overline{XY} and \overline{PQ} intersect at M.
- (c) Line l contains E and F but not D.
- (d) \overline{OP} and \overline{OQ} meet at O.

6. Consider the following figure of line \overline{MN} . Say whether following statements are true or false in the context of the given figure:

- (a) Q, M, O, N, P are points on the line \overline{MN} .
- (b) M, O, N are points on a line segment \overline{MN} .
- (c) M and N are end points of line segment \overline{MN} .
- (d) O and N are end points of line segment \overline{OP} .
- (e) M is one of the end points of line segment \overline{QO} .
- (f) M is point on ray \overline{OP} .
- (g) Ray \overline{OP} is different from ray \overline{OM} .
- (h) Ray \overline{OP} same as ray \overline{OM} .
- (i) Ray \overline{OM} is not opposite to ray \overline{OP} .
- (j) O is not an initial point of \overline{NP} and \overline{NM} .



Class –VI Mathematics (Ex. 4.1)

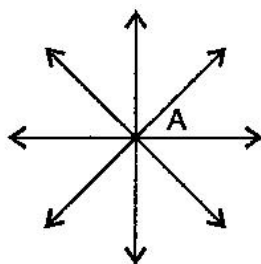
Answers

1. (a) Five points are: O, B, C, D, E
 (b) A line: $\overline{DE}, \overline{DB}, \overline{OE}, \overline{OB}$
 (c) Four rays: $\overrightarrow{OD}, \overrightarrow{OE}, \overrightarrow{OC}, \overrightarrow{OB}$
 (d) Four line segments: $\overline{DE}, \overline{OE}, \overline{OC}, \overline{OB},, \overline{OD}$

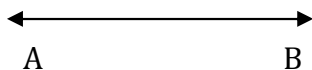
2. $\overline{AB}, \overline{AC}, \overline{AD}, \overline{BC}, \overline{BD}, \overline{CD}, \overline{BA}, \overline{CA}, \overline{DA}, \overline{CB}, \overline{DB}, \overline{DC}$

3. (a) A line containing E = \overline{AE} or \overline{FE}
 (b) A line passing through A = \overline{AE} or \overline{DE}
 (c) A line on which O lies = \overline{CO} or \overline{OC}
 (d) Two pairs of intersecting lines are : $\overline{AD}, \overline{CO}$ and $\overline{AE}, \overline{FE}$

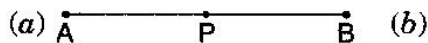
4. (a) Infinite number of lines can pass through one given point.



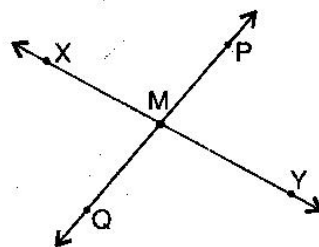
- (b) Only one line can pass through two given points.



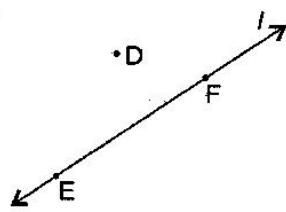
5. Sol.



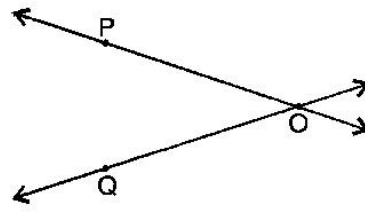
(b)



(c)



(d)

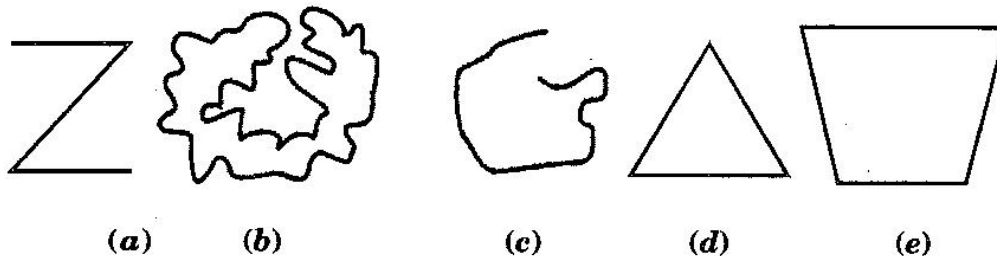


6. (a) True
(b) True
(c) True
(d) False
(e) False
(f) False
(g) True
(h) False
(i) False
(j) False
(k) True

Class –VI Mathematics (Ex. 4.2)

Questions

1. Classify the following curves as (i) Open or (ii) Closed.



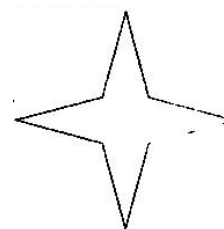
2. Draw rough diagrams to illustrate the following:

- (a) Open curve
- (b) Closed curve

3. Draw any polygon and shade its interior.

4. Consider the given figure and answer the questions:

- (a) Is it a curve?
- (b) Is it closed?



5. Illustrate, if possible, each one of the following with a rough diagram:

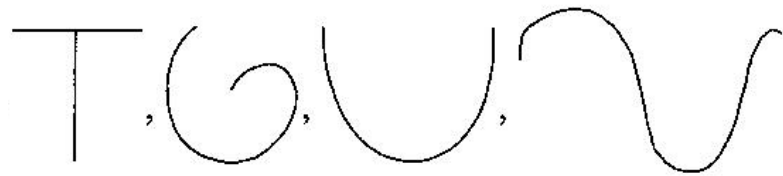
- (a) A closed curve that is not a polygon.
- (b) An open curve made up entirely of line segments.
- (c) A polygon with two sides.

Class -VI Mathematics (Ex. 4.2)

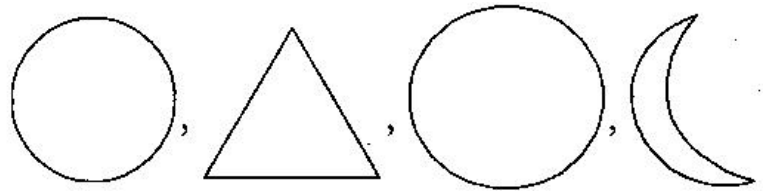
Answers

1. (a) Open curve
(b) Closed curve
(c) Open curve
(d) Closed curve
(e) Closed curve

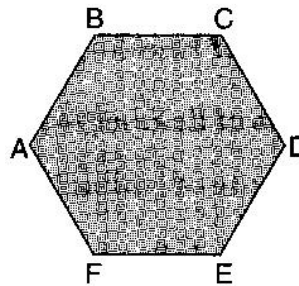
2. Open curves:



Closed curves

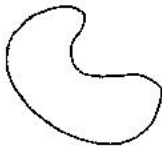


3. Polygon ABCDEF



4. (a) Yes, it is a curve.
(b) Yes, it is closed.

5. (a)



- (b)

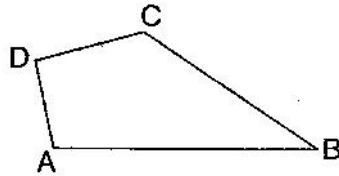


- (c) Polygon with two sides cannot be draw.
-

Class -VI Mathematics (Ex. 4.3)

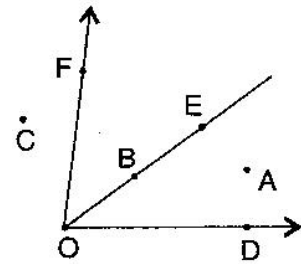
Questions

1. Name the angles in the given figure:



2. In the given diagram, name the point(s):

- (a) In the interior of $\angle DOE$.
- (b) In the exterior of $\angle EOF$.
- (c) On $\angle EOF$.



3. Draw rough diagrams of two angles such that they have:

- (a) One point in common.
- (b) Two points in common.
- (c) Three points in common.
- (d) Four points in common.
- (e) One ray in common.

Class -VI Mathematics (Ex. 4.3)

Answers

1. There are four angles in given figure:

$\angle ABC$, $\angle CDA$, $\angle DAB$, $\angle DCB$

2. (a) Point interior of $\angle DOE$:

A

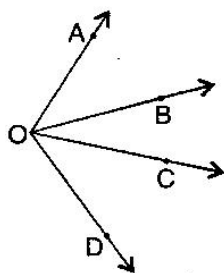
- (b) Points exterior of $\angle EOF$:

C, A, D

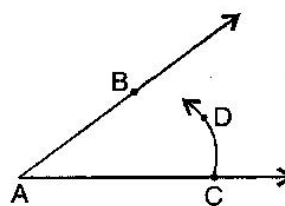
- (c) Points on $\angle EOF$:

E, O, B, F

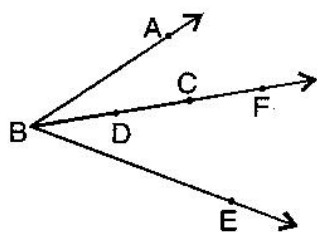
3. (a)



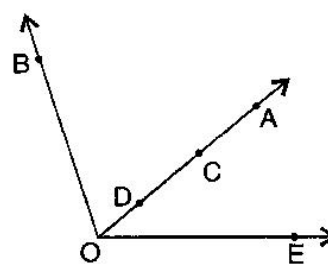
- (b)



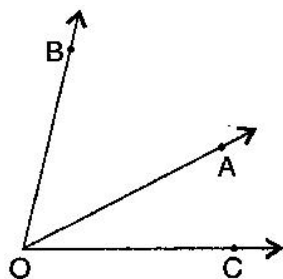
- (c)



- (d)



- (e)

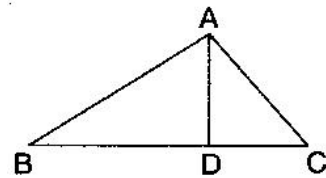


Class –VI Mathematics (Ex. 4.4)

Questions

1. Draw a rough sketch of a triangle ABC. Mark a point P in its interior and a point Q in its exterior. Is the point A in its exterior or in its interior?

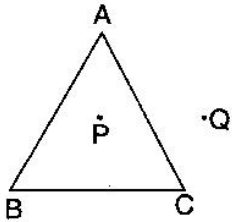
2. (a) Identify three triangles in the figure:
(b) Write the names of seven angles.
(c) Write the names of six line segments.
(d) Which two triangles have $\angle B$ as common?



Class -VI Mathematics (Ex. 4.4)

Answers

1. Sol.



A is neither interior of the figure nor exterior of triangle. It is a vertex.

2. (a) The three triangles are: $\triangle ABC$, $\triangle ABD$, $\triangle ADC$
(b) Angles are: $\angle ADB$, $\angle ADC$, $\angle ABD$, $\angle ACD$, $\angle BAD$, $\angle CAD$, $\angle BAC$
(c) Line segments are: \overline{AB} , \overline{AC} , \overline{AD} , \overline{BD} , \overline{DC} , \overline{BC}
(d) Triangles having common $\angle B$: $\triangle ABC$, $\triangle ABD$,

Class –VI Mathematics (Ex. 4.5)

Questions

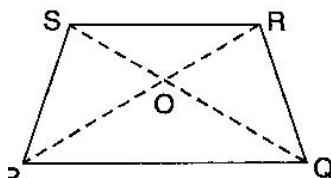
1. Draw a rough sketch of a quadrilateral PQRS. Draw its diagonals. Name them. Is the meeting point of the diagonals in the interior or exterior of the quadrilateral?
 2. Draw a rough sketch of a quadrilateral KLMN. State:
 - (a) Two pairs of opposite sides.
 - (b) Two pairs of opposite angles.
 - (c) Two pairs of adjacent sides.
 - (d) Two pairs of adjacent angles.
 3. Investigate:

Use strip and fasteners to make a triangle and a quadrilateral.
Try to push inward at any one vertex of the triangle. Do the same to the quadrilateral.
Is the triangle distorted? Is the quadrilateral distorted? Is the triangle rigid?
Why is it that structures like electric towers make use of triangular shapes and not quadrilateral?
-

Class –VI Mathematics (Ex. 4.5)

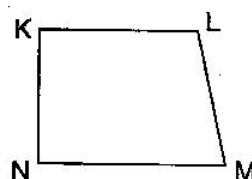
Answers

1. Sol.



Diagonal PR and diagonal SQ meet at O, which is inside the quadrilateral.

2. (a) Pair of opposite sides: KL and MN, KN and LM
(b) Pair of opposite angles: $\angle K$ and $\angle M$, $\angle L$ and $\angle N$
(c) Pair of adjacent sides: KN and NM, KL and LM
(d) Pair of adjacent angles: $\angle K$ and $\angle N$, $\angle L$ and $\angle M$



3. O is common to both the angles $\angle AOC$ and $\angle BOC$.

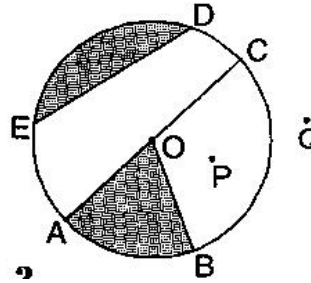
No, the triangle is not distorted but the quadrilateral is distorted and also the triangle is rigid. Structures like electric towers make use of triangular shape so that they could not be distorted and they could be rigid.

Class -VI Mathematics (Ex. 4.6)

Questions

1. From the figure, identify:

- (a) The centre of circle.
- (b) Three radii.
- (c) A diameter.
- (d) A chord.
- (e) Two points in the interior.
- (f) A point in the exterior.
- (g) A sector.
- (h) A segment.

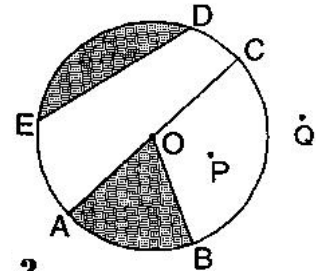


- 2.
 - (a) Is every diameter of a circle also a chord?
 - (b) Is every chord of a circle also a diameter?
 - 3. Draw any circle and mark:
 - (a) Its centre.
 - (b) A radius.
 - (c) A diameter.
 - (d) A sector.
 - 4. Say true or false:
 - (a) Two diameters of a circle will necessarily intersect.
 - (b) The centre of a circle is always in its interior.
-

Class -VI Mathematics (Ex. 4.6)

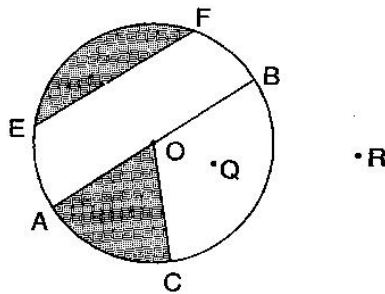
Answers

1. (a) O is the centre.
(b) Three radii: OA, OB and OC
(c) A diameter: AC
(d) A chord: ED
(e) Interior points: O, P
(f) Exterior point: Q
(g) A sector: OAB
(h) A segment: \widehat{ED}



2. (a) Yes, every diameter of a circle is also a chord.
(b) No, every chord of a circle is not a diameter.

3. Sol.



4. (a) True
(b) True
-

DELHI PUBLIC SCHOOL, GANDHINAGAR

CHAPTER 3 PLAYING WITH NUMBERS

MIND MAP

This chapter consists of seven different topics. The most probable questions from the examination point of view are given below.

TYPE: 1 **FACTORS AND MULTIPLES**

- Q.1. Find all the factors of 36.
Q.2. Find first five multiples of 8.

TYPE: 2 **PRIME AND COMPOSITE NUMBERS**

- Q.1. Express 24 as the sum of two odd primes.
Q.2. Express 53 as the sum of three odd primes

TYPE: 3 **DIVISIBILITY RULES**

- Q.1. Use divisibility rules to check if the number 6072 is divisible by 6 and 8.
Q.2. Use divisibility rules to check if the number 8931 is divisible by 9 or not.
Q.3. Use divisibility rules to check if the number 563761 is divisible by 11 or not.

TYPE: 4 **SOME MORE DIVISIBILITY RULES**

- Q.1. Find the common factors of 4, 8 and 12.
Q.2. A number is divisible by both 5 and 12. By which other number will that number be always divisible?
Q.3. Find the common multiples of 5 and 6 less than 100.

TYPE: 5 **CO-PRIME NUMBERS**

- Q.1. Which of the following numbers are co-prime?
(a) 52 and 81 (b) 294 and 256

TYPE: 6 **PRIME FACTORISATION**

- Q.1. Draw factor tree of 30.
Q.2. Write the greatest 4-digit number and express it in terms of its prime factors.
Q.3. Express 230 as the product of prime factors using division method.

TYPE: 7 **HCF AND LCM**

- Q.1. Find the HCF of the numbers 64, 96 and 144.
Q.2. Find the LCM of the numbers 70, 140 and 350.

Class –VI Mathematics (Ex. 3.1)

Questions

1. Write all the factors of the following numbers:

(a) 24

(b) 15

(c) 21

(d) 27

(e) 12

(f) 20

(g) 18

(h) 23

(i) 36

2. Write first five multiples of:

(a) 5

(b) 8

(c) 9

3. Match the items in column 1 with the items in column 2:

Column 1

Column 2

(i) 35

(a) Multiple of 8

(ii) 15

(b) Multiple of 7

(iii) 16

(c) Multiple of 70

(iv) 20

(d) Factor of 30

(v) 20

(e) Factor of 50

4. Find all the multiples of 9 up to 100.

Class –VI Mathematics (Ex. 3.1)

Answers

1. (a) $24 = 1 \times 24 = 2 \times 12 = 3 \times 8 = 4 \times 6 = 6 \times 4$
∴ Factors of 24 = 1, 2, 3, 4, 6, 12, 24
- (b) $15 = 1 \times 15 = 3 \times 5 = 5 \times 3$
∴ Factors of 15 = 1, 3, 5, 15
- (c) $21 = 1 \times 21 = 3 \times 7 = 7 \times 3$
∴ Factors of 21 = 1, 3, 7, 21
- (d) $27 = 1 \times 27 = 3 \times 9 = 9 \times 3$
∴ Factors of 27 = 1, 3, 9, 27
- (e) $12 = 1 \times 12 = 2 \times 6 = 3 \times 4 = 4 \times 3$
∴ Factors of 12 = 1, 2, 3, 4, 6, 12
- (f) $20 = 1 \times 20 = 2 \times 10 = 4 \times 5 = 5 \times 4$
∴ Factors of 20 = 1, 2, 4, 5, 10, 20
- (g) $18 = 1 \times 18 = 2 \times 9 = 3 \times 6$
∴ Factors of 18 = 1, 2, 3, 6, 9, 18
- (h) $23 = 1 \times 23$
∴ Factors of 23 = 1, 23
- (i) $36 = 1 \times 36 = 2 \times 18 = 3 \times 12 = 4 \times 9 = 6 \times 6$
∴ Factors of 36 = 1, 2, 3, 4, 6, 9, 12, 18, 36
2. (a) $5 \times 1 = 5, 5 \times 2 = 10, 5 \times 3 = 15, 5 \times 4 = 20, 5 \times 5 = 25$
∴ First five multiples of 5 are 5, 10, 15, 20, 25.
- (b) $8 \times 1 = 8, 8 \times 2 = 16, 8 \times 3 = 24, 8 \times 4 = 32, 8 \times 5 = 40$
∴ First five multiples of 8 are 8, 16, 24, 32, 40.
- (c) $9 \times 1 = 9, 9 \times 2 = 18, 9 \times 3 = 27, 9 \times 4 = 36, 9 \times 5 = 45$
∴ First five multiples of 9 are 9, 18, 27, 36, 45.
3. (i) → (b), (ii) → (d), (iii) → (a), (iv) → (f), (v) → (e)
4. Multiples of 9 up to 100 are:
9, 18, 27, 36, 45, 54, 63, 72, 81, 90, 99
-

Class –VI Mathematics (Ex. 3.2)

Questions

1. What is the sum of any two:
(a) Odd numbers.
(b) Even numbers.
 2. State whether the following statements are true or false:
(a) The sum of three odd numbers is even.
(b) The sum of two odd numbers and one even number is even.
(c) The product of three odd numbers is odd.
(d) If an even number is divided by 2, the quotient is always odd.
(e) All prime numbers are odd.
(f) Prime numbers do not have any factors.
(g) Sum of two prime numbers is always even.
(h) 2 is the only even prime number.
(i) All even numbers are composite numbers.
(j) The product of two even numbers is always even.
 3. The numbers 13 and 31 are prime numbers. Both these numbers have same digits 1 and 3. Find such pairs of prime numbers up to 100.
 4. Write down separately the prime and composite numbers less than 20.
 5. What is the greatest prime number between 1 and 10?
 6. Express the following as the sum of two odd numbers:
(a) 44 (b) 36 (c) 24 (d) 18
 7. Give three pairs of prime numbers whose difference is 2.
[Remark: Two prime numbers whose difference is 2 are called twin primes.]
 8. Which of the following numbers are prime:
(a) 23 (b) 51 (c) 37 (d) 26
 9. Write seven consecutive composite numbers less than 100 so that there is no prime number between them.
 10. Express each of the following numbers as the sum of three odd primes:
(a) 21 (b) 31 (c) 53 (d) 61
 11. Write five pairs of prime numbers less than 20 whose sum is divisible by 5.
[Hint: $3 + 7 = 10$]
 12. Fill in the blanks:
(a) A number which has only two factors is called a _____.
(b) A number which has more than two factors is called a _____.
(c) 1 neither _____ nor _____.
(d) The smallest prime number is _____.
(e) The smallest composite number is _____.
(f) The smallest even number is _____.
-

Class -VI Mathematics (Ex. 3.2)

Answers

1. (a) The sum of any two odd numbers is an even number.
Example: $1 + 3 = 4$, $3 + 5 = 8$
(b) The sum of any two even numbers is an even number.
Example: $2 + 4 = 6$, $6 + 8 = 14$
2. (a) False (b) True (c) True (d) False (e) False (f) False
(g) False (h) True (i) False (j) True
3. 17 and 71; 37 and 73; 79 and 97
4. Prime numbers: 2, 3, 5, 7, 11, 13, 17, 19
Composite numbers: 4, 6, 8, 9, 10, 12, 14, 15, 16, 18
5. The greatest prime number between 1 and 10 is '7'.
6. (a) $3 + 41 = 44$ (b) $5 + 31 = 36$ (c) $7 + 17 = 24$ (d) $7 + 11 = 18$
7. 3 and 5; 5 and 7; 11 and 13
8. (a) 23 and (c) 37 are prime numbers.
9. 90, 91, 92, 93, 94, 95, 96
10. (a) $21 = 3 + 7 + 11$ (b) $31 = 3 + 11 + 17$
(c) $53 = 13 + 17 + 23$ (d) $61 = 19 + 29 + 13$
11. $2 + 3 = 5$; $7 + 13 = 20$; $3 + 17 = 20$; $2 + 13 = 15$; $5 + 5 = 10$
12. (a) Prime number
(b) Composite number
(c) Prime number and composite number
(d) 2
(e) 4
(f) 2
-

Class –VI Mathematics (Ex. 3.3)**Questions**

1. Using divisibility test, determine which of the following numbers are divisible by 2; by 3; by 4; by 5; by 6; by 8; by 9; by 10; by 11. (say yes or no)

| Number | Divisible by | | | | | | | |
|--------|--------------|----|-----|----|----|-----|----|----|
| | 2 | 3 | 4 | 5 | 6 | 8 | 9 | 11 |
| 128 | Yes | No | Yes | No | No | Yes | No | No |
| 990 | | | | | | | | |
| 1586 | | | | | | | | |
| 275 | | | | | | | | |
| 6686 | | | | | | | | |
| 639210 | | | | | | | | |
| 429714 | | | | | | | | |
| 2856 | | | | | | | | |
| 3060 | | | | | | | | |
| 406839 | | | | | | | | |

2. Using divisibility test, determine which of the following numbers are divisible by 4; by 8:

(a) 572 (b) 726352 (c) 5500 (d) 6000
(e) 12159 (f) 14560 (g) 21084 (h) 31795072
(i) 1700 (j) 2150

3. Using divisibility test, determine which of the following numbers are divisible by 6:

(a) 297144 (b) 1258 (c) 4335 (d) 61233
(e) 901352 (f) 438750 (g) 1790184 (h) 12583
(i) 639210 (j) 17852

4. Using divisibility test, determine which of the following numbers are divisible by 11:

(a) 5445 (b) 10824 (c) 7138965 (d) 70169308
(e) 10000001 (f) 901153

5. Write the smallest digit and the largest digit in the blanks space of each of the following numbers so that the number formed is divisibly by 3:

(a) _____ 6724 (b) 4765 _____ 2

6. Write the smallest digit and the largest digit in the blanks space of each of the following numbers so that the number formed is divisibly by 11:

(a) 92 _____ 389 (b) 8 _____ 9484

Class –VI Mathematics (Ex. 3.3)

Answers

1. Sol.

| Number | Divisible by | | | | | | | | |
|--------|--------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | 2 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 |
| 128 | Yes | No | Yes | No | No | Yes | No | No | No |
| 990 | Yes | Yes | No | Yes | Yes | No | Yes | Yes | Yes |
| 1586 | Yes | No | No | No | No | No | No | No | No |
| 275 | No | No | No | Yes | No | No | No | No | Yes |
| 6686 | Yes | No | No | No | No | No | No | No | No |
| 639210 | Yes | Yes | No | Yes | Yes | No | No | Yes | Yes |
| 429714 | Yes | Yes | No | No | Yes | No | Yes | No | No |
| 2856 | Yes | Yes | Yes | No | Yes | Yes | No | No | No |
| 3060 | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | No |
| 406839 | No | Yes | No | No | No | no | No | No | No |

2. (a) 572 → Divisible by 4 as its last two digits are divisible by 4.
 → Not divisible by 8 as its last three digits are not divisible by 8.
- (b) 726352 → Divisible by 4 as its last two digits are divisible by 4.
 → Divisible by 8 as its last three digits are divisible by 8.
- (c) 5500 → Divisible by 4 as its last two digits are divisible by 4.
 → Not divisible by 8 as its last three digits are not divisible by 8.
- (d) 6000 → Divisible by 4 as its last two digits are 0.
 → Divisible by 8 as its last three digits are 0.
- (e) 12159 → Not divisible by 4 and 8 as it is an odd number.
- (f) 14560 → Divisible by 4 as its last two digits are divisible by 4.
 → Divisible by 8 as its last three digits are divisible by 8.
- (g) 21084 → Divisible by 4 as its last two digits are divisible by 4.
 → Not divisible by 8 as its last three digits are not divisible by 8.
- (h) 31795072 → Divisible by 4 as its last two digits are divisible by 4.
 → Divisible by 8 as its last three digits are divisible by 8.
- (i) 1700 → Divisible by 4 as its last two digits are 0.
 → Not divisible by 8 as its last three digits are not divisible by 8.
- (j) 5500 → Not divisible by 4 as its last two digits are not divisible by 4.
 → Not divisible by 8 as its last three digits are not divisible by 8.
3. (a) 297144 → Divisible by 2 as its units place is an even number.
 → Divisible by 3 as sum of its digits (= 27) is divisible by 3.
 Since the number is divisible by both 2 and 3, therefore, it is also divisible by 6.
-

-
- (b) 1258 → Divisible by 2 as its units place is an even number.
→ Not divisible by 3 as sum of its digits ($= 16$) is not divisible by 3.

Since the number is not divisible by both 2 and 3, therefore, it is not divisible by 6.

- (c) 4335 → Not divisible by 2 as its units place is not an even number.
→ Divisible by 3 as sum of its digits ($= 15$) is divisible by 3.

Since the number is not divisible by both 2 and 3, therefore, it is not divisible by 6.

- (d) 61233 → Not divisible by 2 as its units place is not an even number.
→ Divisible by 3 as sum of its digits ($= 15$) is divisible by 3.

Since the number is not divisible by both 2 and 3, therefore, it is not divisible by 6.

- (e) 901352 → Divisible by 2 as its units place is an even number.
→ Not divisible by 3 as sum of its digits ($= 20$) is not divisible by 3.

Since the number is not divisible by both 2 and 3, therefore, it is not divisible by 6.

- (f) 438750 → Divisible by 2 as its units place is an even number.
→ Divisible by 3 as sum of its digits ($= 27$) is not divisible by 3.

Since the number is divisible by both 2 and 3, therefore, it is divisible by 6.

- (g) 1790184 → Divisible by 2 as its units place is an even number.
→ Divisible by 3 as sum of its digits ($= 30$) is not divisible by 3.

Since the number is divisible by both 2 and 3, therefore, it is divisible by 6.

- (h) 12583 → Not divisible by 2 as its units place is not an even number.
→ Not divisible by 3 as sum of its digits ($= 19$) is not divisible by 3.

Since the number is not divisible by both 2 and 3, therefore, it is not divisible by 6.

- (i) 639210 → Divisible by 2 as its units place is an even number.
→ Divisible by 3 as sum of its digits ($= 21$) is not divisible by 3.

Since the number is divisible by both 2 and 3, therefore, it is divisible by 6.

- (j) 17852 → Divisible by 2 as its units place is an even number.
→ Not divisible by 3 as sum of its digits ($= 23$) is not divisible by 3.

Since the number is not divisible by both 2 and 3, therefore, it is not divisible by 6.

4. (a) 5445 → Sum of the digits at odd places $= 4 + 5 = 9$
→ Sum of the digits at even places $= 4 + 5 = 9$
→ Difference of both sums $= 9 - 9 = 0$

Since the difference is 0, therefore, the number is divisible by 11.

- (b) 10824 → Sum of the digits at odd places $= 4 + 8 + 1 = 13$
→ Sum of the digits at even places $= 2 + 0 = 2$
→ Difference of both sums $= 13 - 2 = 11$

Since the difference is 11, therefore, the number is divisible by 11.

- (c) 7138965 → Sum of the digits at odd places $= 5 + 9 + 3 + 7 = 24$
→ Sum of the digits at even places $= 6 + 8 + 1 = 15$
→ Difference of both sums $= 24 - 15 = 9$

Since the difference is neither 0 nor 11, therefore, the number is not divisible by 11.

- (d) 70169308 → Sum of the digits at odd places $= 8 + 3 + 6 + 0 = 17$
-

→ Sum of the digits at even places = $0 + 9 + 1 + 7 = 17$

→ Difference of both sums = $17 - 17 = 0$

Since the difference is 0, therefore, the number is divisible by 11.

(e) 10000001 → Sum of the digits at odd places = $1 + 0 + 0 + 0 = 1$

→ Sum of the digits at even places = $0 + 0 + 0 + 1 = 1$

→ Difference of both sums = $1 - 1 = 0$

Since the difference is 0, therefore, the number is divisible by 11.

(f) 901153 → Sum of the digits at odd places = $3 + 1 + 0 = 4$

→ Sum of the digits at even places = $5 + 1 + 9 = 15$

→ Difference of both sums = $15 - 4 = 11$

Since the difference is 11, therefore, the number is divisible by 11.

5. (a) We know that a number is divisible by 3 if the sum of all digits is divisible by 3.

Therefore, Smallest digit : 2 → $\underline{2}6724 = 2 + 6 + 7 + 2 + 4 = 21$

Largest digit : 8 → $\underline{8}6724 = 8 + 6 + 7 + 2 + 4 = 27$

(b) We know that a number is divisible by 3 if the sum of all digits is divisible by 3.

Therefore, Smallest digit : 0 → $4765\underline{0}2 = 4 + 7 + 6 + 5 + 0 + 2 = 24$

Largest digit : 9 → $4765\underline{9}2 = 4 + 7 + 6 + 5 + 0 + 2 = 33$

6. (a) We know that a number is divisible by 11 if the difference of the sum of the digits at odd places and that of even places should be either 0 or 11.

Therefore, $92\underline{8}389$ → Odd places = $9 + 8 + 8 = 25$

Even places = $2 + 3 + 9 = 14$

Difference = $25 - 14 = 11$

(b) We know that a number is divisible by 11 if the difference of the sum of the digits at odd places and that of even places should be either 0 or 11.

Therefore, $8\underline{6}9484$ → Odd places = $8 + 9 + 8 = 25$

Even places = $6 + 4 + 4 = 14$

Difference = $25 - 14 = 11$

Class –VI Mathematics (Ex. 3.4)

Questions

1. Find the common factors of:
(a) 20 and 28
(b) 15 and 25
(c) 35 and 50
(d) 56 and 120
 2. Find the common factors of:
(a) 4, 8 and 12
(b) 5, 15 and 25
 3. Find the first three common multiples of:
(a) 6 and 8
(b) 12 and 18
 4. Write all the numbers less than 100 which are common multiples of 3 and 4.
 5. Which of the following numbers are co-prime:
(a) 18 and 35
(b) 15 and 37
(c) 30 and 415
(d) 17 and 68
(e) 216 and 215
(f) 81 and 16
 6. A number is divisible by both 5 and 12. By which other number will that number be always divisible?
 7. A number is divisible by 12. By what other numbers will that number be divisible?
-

Class –VI Mathematics (Ex. 3.4)

Answers

1. (a) Factors of 20 = 1, 2, 4, 5, 10, 20
Factors of 28 = 1, 2, 4, 7, 14, 28
Common factors = 1, 2, 4
 - (b) Factors of 15 = 1, 3, 5, 15
Factors of 25 = 1, 5, 25
Common factors = 1, 5
 - (c) Factors of 35 = 1, 5, 7, 35
Factors of 50 = 1, 2, 5, 10, 25, 50
Common factors = 1, 5
 - (d) Factors of 56 = 1, 2, 4, 7, 8, 14, 28, 56
Factors of 120 = 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 60, 120
Common factors = 1, 2, 4, 8

 2. (a) Factors of 4 = 1, 2, 4
Factors of 8 = 1, 2, 4, 8
Factors of 12 = 1, 2, 3, 4, 6, 12
Common factors of 4, 8 and 12 = 1, 2, 4
 - (b) Factors of 5 = 1, 5
Factors of 15 = 1, 3, 5, 15
Factors of 25 = 1, 5, 25
Common factors of 5, 15 and 25 = 1, 5

 3. (a) Multiple of 6 = 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 72,
Multiple of 8 = 8, 16, 24, 32, 40, 48, 56, 64, 72,
Common multiples of 6 and 8 = 24, 48, 72
 - (b) Multiple of 12 = 12, 24, 36, 48, 60, 72, 84, 96, 108, 120,
Multiple of 18 = 18, 36, 54, 72, 90, 108,
Common multiples of 12 and 18 = 36, 72, 108

 4. Multiple of 3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63, 66, 69, 72, 75, 78, 81, 84, 87, 90, 93, 96, 99
Multiple of 4 = 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100
Common multiples of 3 and 4 = 12, 24, 36, 48, 60, 72, 84, 96

 5. (a) Factors of 18 = 1, 2, 3, 6, 9, 18
Factors of 35 = 1, 5, 7, 35
-

Common factor = 1

Since, both have only one common factor, i.e., 1, therefore, they are co-prime numbers.

(b) Factors of 15 = 1, 3, 5, 15

Factors of 37 = 1, 37

Common factor = 1

Since, both have only one common factor, i.e., 1, therefore, they are co-prime numbers.

(c) Factors of 30 = 1, 2, 3, 5, 6, 15, 30

Factors of 415 = 1, 5, , 83, 415

Common factor = 1, 5

Since, both have more than one common factor, therefore, they are not co-prime numbers.

(d) Factors of 17 = 1, 17

Factors of 68 = 1, 2, 4, 17, 34, 68

Common factor = 1, 17

Since, both have more than one common factor, therefore, they are not co-prime numbers.

(e) Factors of 216 = 1, 2, 3, 4, 6, 8, 36, 72, 108, 216

Factors of 215 = 1, 5, 43, 215

Common factor = 1

Since, both have only one common factor, i.e., 1, therefore, they are co-prime numbers.

(f) Factors of 81 = 1, 3, 9, 27, 81

Factors of 16 = 1, 2, 4, 8, 16

Common factor = 1

Since, both have only one common factor, i.e., 1, therefore, they are co-prime numbers.

6. $5 \times 12 = 60$. The number must be divisible by 60.

7. Factors of 12 are 1, 2, 3, 4, 6, 12.

Therefore, the number also be divisible by 1, 2, 3, 4 and 6.

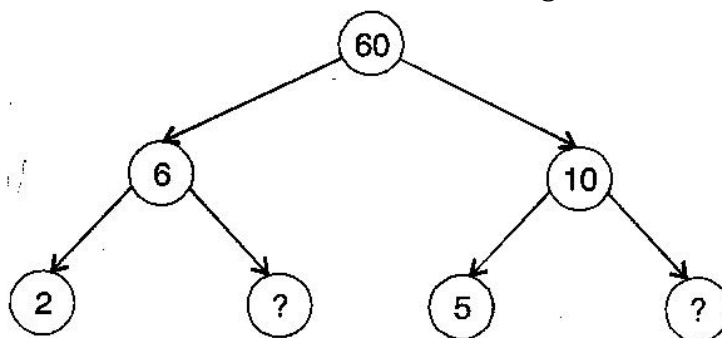
Class –VI Mathematics (Ex. 3.5)

Questions

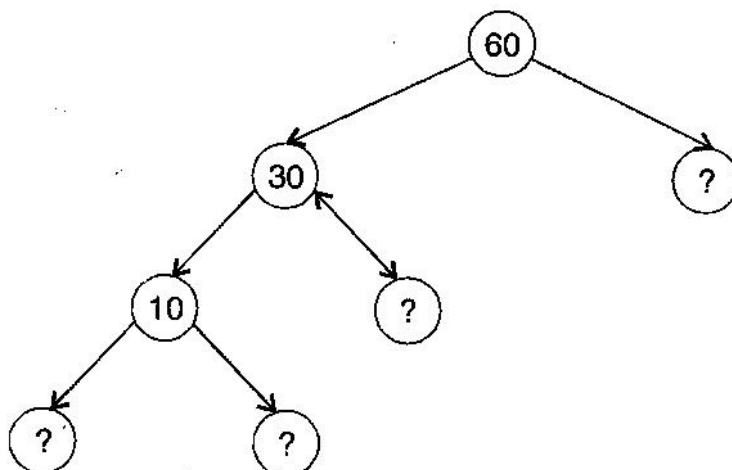
1. Which of the following statements are true:
- (a) If a number is divisible by 3, it must be divisible by 9.
 - (b) If a number is divisible by 9, it must be divisible by 3.
 - (c) If a number is divisible by 18, it must be divisible by both 3 and 6.
 - (d) If a number is divisible by 9 and 10 both, then it must be divisible by 90.
 - (e) If two numbers are co-primes, at least one of them must be prime.
 - (f) All numbers which are divisible by 4 must also be divisible by 8.
 - (g) All numbers which are divisible by 8 must also be divisible by 4.
 - (h) If a number exactly divides two numbers separately, it must exactly divide their sum.
 - (i) If a number exactly divides the sum of two numbers, it must exactly divide the two numbers separately.

2. Here are two different factor trees for 60. Write the missing numbers.

(a)



(b)



3. Which factors are not included in the prime factorization of a composite number?
4. Write the greatest 4-digit number and express it in terms of its prime factors.
5. Write the smallest 5-digit number and express it in terms of its prime factors.
-

-
6. Find all the prime factors of 1729 and arrange them in ascending order. Now state the relation, if any, between, two consecutive prime numbers.
 7. The product of three consecutive numbers is always divisible by 6. Verify this statement with the help of some examples.
 8. The sum of three consecutive numbers is always divisible by 4. Verify this statement with the help of some examples.
 9. In which of the following expressions, prime factorization has been done:
 - (a) $24 = 2 \times 3 \times 4$
 - (b) $56 = 7 \times 2 \times 2 \times 2$
 - (c) $70 = 2 \times 5 \times 7$
 - (d) $54 = 2 \times 3 \times 9$
 10. Determine if 25110 is divisible by 45.
[Hint: 5 and 9 are co-prime numbers. Test the divisibility of the number by 5 and 9.]
 11. 18 is divisible by both 2 and 3. It is also divisible by $2 \times 3 = 6$. Similarly, a number is divisible by 4 and 6. Can we say that the number must be divisible by $4 \times 6 = 24$? If not, give an example to justify your answer.
 12. I am the smallest number, having four different prime factors. Can you find me?
-

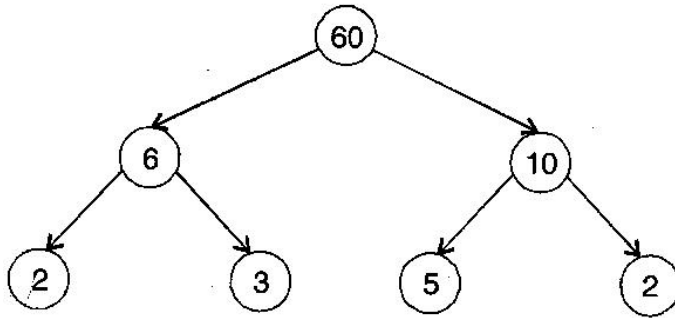
Class -VI Mathematics (Ex. 3.5)

Answers

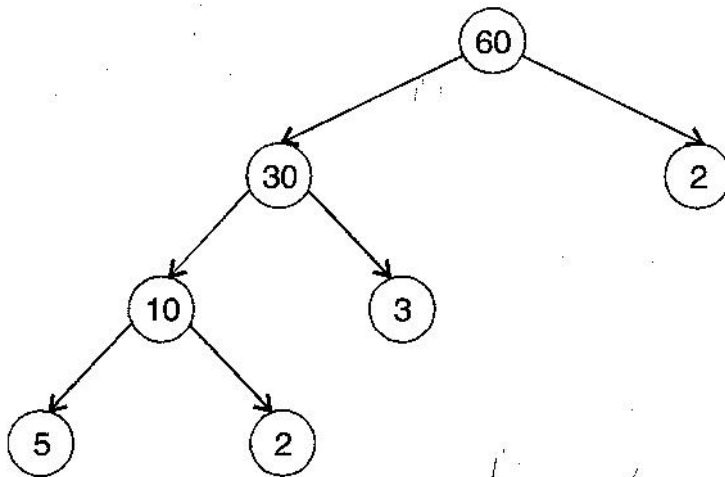
1. Statements (b), (c), (d), (g) and (h) are true.

2. Sol.

(a)

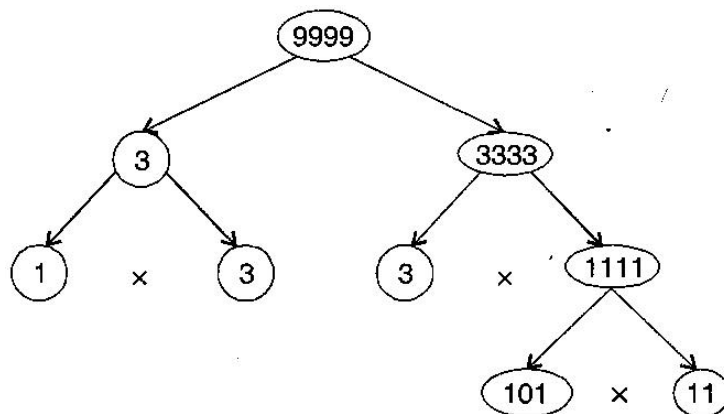


(b)



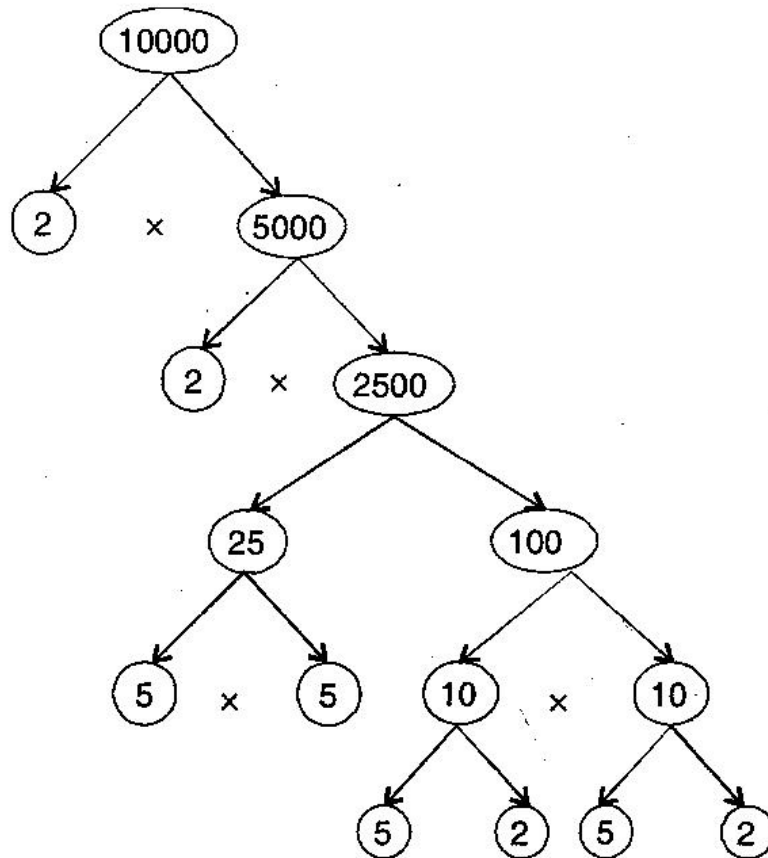
3. 1

4. The greatest four digit number is 9999.



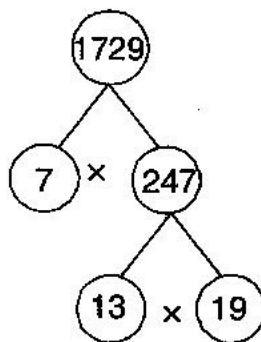
The prime factors of 9999 are $3 \times 3 \times 11 \times 101$.

-
5. The smallest five digit number is 10000.



The prime factors of 10000 are $2 \times 2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 5$.

6. Sol.



Prime factors of 1729 are $7 \times 13 \times 19$.

The difference of two consecutive prime factors is 6.

7. Among the three consecutive numbers, there must be one even number and one multiple of 3. Thus, the product must be multiple of 6.

Example: (i) $2 \times 3 \times 4 = 24$
(ii) $4 \times 5 \times 6 = 120$

-
8. $3 + 5 = 8$ and 8 is divisible by 4.
 $5 + 7 = 12$ and 12 is divisible by 4.
 $7 + 9 = 16$ and 16 is divisible by 4.
 $9 + 11 = 20$ and 20 is divisible by 4.
9. In expressions (b) and (c), prime factorization has been done.
10. The prime factorization of $45 = 5 \times 9$
25110 is divisible by 5 as '0' is at its unit place.
25110 is divisible by 9 as sum of digits is divisible by 9.
Therefore, the number must be divisible by $5 \times 9 = 45$
11. No. Number 12 is divisible by both 6 and 4 but 12 is not divisible by 24.
12. $2 \times 3 \times 5 \times 7 = 210$
-

Class –VI Mathematics (Ex. 3.6)

Questions

1. Find the H.C.F. of the following numbers:

(a) 18, 48

(b) 30, 42

(c) 18, 60

(d) 27, 63

(e) 36, 84

(f) 34, 102

(g) 70, 105, 175

(h) 91, 112, 49

(i) 18, 54, 81

(j) 12, 45, 75

2. What is the H.C.F. of two consecutive:

(a) numbers?

(b) even numbers?

(c) odd numbers?

3. H.C.F. of co-prime numbers 4 and 15 was found as follows by factorization:

$4 = 2 \times 2$ and $15 = 3 \times 5$ since there is no common prime factor, so H.C.F. of 4 and 15 is 0. Is the answer correct? If not, what is the correct H.C.F.?

Class –VI Mathematics (Ex. 3.6)

Answers

1.

| | |
|--|---|
| <p>(a) Factors of $18 = 2 \times 3 \times 3$ Factors of $48 = 2 \times 2 \times 2 \times 2 \times 3$ H.C.F. $(18, 48) = 2 \times 3 = 6$</p> <p>(c) Factors of $18 = 2 \times 3 \times 3$ Factors of $60 = 2 \times 2 \times 3 \times 5$ H.C.F. $(18, 60) = 2 \times 3 = 6$</p> <p>(e) Factors of $36 = 2 \times 2 \times 3 \times 3$ Factors of $84 = 2 \times 2 \times 3 \times 7$ H.C.F. $(36, 84) = 2 \times 2 \times 3 = 12$</p> <p>(g) Factors of $70 = 2 \times 5 \times 7$ Factors of $105 = 3 \times 5 \times 7$ Factors of $175 = 5 \times 5 \times 7$ H.C.F. $= 5 \times 7 = 35$</p> <p>(i) Factors of $18 = 2 \times 3 \times 3$ Factors of $54 = 2 \times 3 \times 3 \times 3$ Factors of $81 = 3 \times 3 \times 3 \times 3$ H.C.F. $= 3 \times 3 = 9$</p> | <p>(b) Factors of $30 = 2 \times 3 \times 5$ Factors of $42 = 2 \times 3 \times 7$ H.C.F. $(30, 42) = 2 \times 3 = 6$</p> <p>(d) Factors of $27 = 3 \times 3 \times 3$ Factors of $63 = 3 \times 3 \times 7$ H.C.F. $(27, 63) = 3 \times 3 = 9$</p> <p>(f) Factors of $34 = 2 \times 17$ Factors of $102 = 2 \times 3 \times 17$ H.C.F. $(34, 102) = 2 \times 17 = 34$</p> <p>(h) Factors of $91 = 7 \times 13$ Factors of $112 = 2 \times 2 \times 2 \times 2 \times 7$ Factors of $49 = 7 \times 7$ H.C.F. $= 1 \times 7 = 7$</p> <p>(j) Factors of $12 = 2 \times 2 \times 3$ Factors of $45 = 3 \times 3 \times 5$ Factors of $75 = 3 \times 5 \times 5$ H.C.F. $= 1 \times 3 = 3$</p> |
|--|---|
 2.

(a) H.C.F. of two consecutive numbers be 1.
(b) H.C.F. of two consecutive even numbers be 2.
(c) H.C.F. of two consecutive odd numbers be 1.
 3. No. The correct H.C.F. is 1.
-

Class –VI Mathematics (Ex. 3.7)

Questions

1. Renu purchases two bags of fertilizer of weights 75 kg and 69 kg. Find the maximum value of weight which can measure the weight of the fertilizer exact number of times.
 2. Three boys step off together from the same spot. Their steps measure 63 cm, 70 cm and 77 cm respectively. What is the maximum distance each should cover so that all can cover the distance in complete steps?
 3. The length, breadth and height of a room are 825 cm, 675 cm and 450 cm respectively. Find the longest tape which can measure the three dimensions of the room exactly.
 4. Determine the smallest 3-digit number which is exactly divisible by 6, 8 and 12.
 5. Determine the largest 3-digit number which is exactly divisible by 8, 10 and 12.
 6. The traffic lights at three different road crossings change after every 48 seconds, 72 seconds and 108 seconds respectively. If they change simultaneously at 7 a.m. at what time will they change simultaneously again?
 7. Three tankers contain 403 liters and 465 liters of diesel respectively. Find the maximum capacity of a container that can measure the diesel of three containers exact number of times.
 8. Find the least number which when divided by 6, 15 and 18, leave remainder 5 in each case.
 9. Find the smallest 4-digit number which is divisible by 18, 24 and 32.
 10. Find the L.C.M. of the following numbers:
(a) 9 and 4 (b) 12 and 5 (c) 6 and 5 (d) 15 and 4
Observe a common property in the obtained L.C.Ms. Is L.C.M. the product of two numbers in each case?
 11. Find the L.C.M. of the following numbers in which one number is the factor of other:
(a) 5, 20 (b) 6, 18 (c) 12, 48 (d) 9, 45
What do you observe in the result obtained?
-

Class –VI Mathematics (Ex. 3.7)**Answers**

1. For finding maximum weight, we have to find H.C.F. of 75 and 69.

Factors of 75 = $3 \times 5 \times 5$

Factors of 69 = 3×23

H.C.F. = 3

Therefore the required weight is 3 kg.

2. For finding minimum distance, we have to find L.C.M of 63, 70, 77.

L.C.M. of 63, 70 and 77 = $7 \times 9 \times 10 \times 11 = 6930$ cm.

Therefore, the minimum distance is 6930 cm.

| | |
|----|------------|
| 7 | 63, 70, 77 |
| 9 | 9, 10, 11 |
| 10 | 1, 10, 11 |
| 11 | 1, 1, 11 |
| | 1, 1, 1 |

3. The measurement of longest tape = H.C.F. of 825 cm, 675 cm and 450 cm.

Factors of 825 = $3 \times 5 \times 5 \times 11$

Factors of 675 = $3 \times 5 \times 5 \times 3 \times 3$

Factors of 450 = $2 \times 3 \times 3 \times 5 \times 5$

H.C.F. = $3 \times 5 \times 5 = 75$ cm

Therefore, the longest tape is 75 cm.

4. L.C.M. of 6, 8 and 12 = $2 \times 2 \times 2 \times 3 = 24$

The smallest 3-digit number = 100

To find the number, we have to divide 100 by 24

$$\begin{array}{r} 4 \\ 24 \overline{) 100} \\ \underline{-24} \\ 4 \end{array}$$

| | |
|---|----------|
| 2 | 6, 8, 12 |
| 2 | 3, 4, 6 |
| 2 | 3, 2, 3 |
| 3 | 3, 1, 3 |
| | 1, 1, 1 |

Therefore, the required number = $100 + (24 - 4) = 120$.

5. L.C.M. of 8, 10, 12 = $2 \times 2 \times 2 \times 3 \times 5 = 120$

The largest three digit number = 999

Now,
$$\begin{array}{r} 8 \\ 120 \overline{) 999} \\ \underline{-960} \\ 39 \end{array}$$

Therefore, the required number = $999 - 39 = 960$

| | |
|---|-----------|
| 2 | 8, 10, 12 |
| 2 | 4, 5, 6 |
| 2 | 2, 5, 3 |
| 3 | 1, 5, 3 |
| 5 | 1, 5, 1 |
| | 1, 1, 1 |

6. L.C.M. of 48, 72, 108 = $2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 432$ sec.

After 432 seconds, the lights change simultaneously.

432 second = 7 minutes 12 seconds

Therefore the time = 7 a.m. + 7 minutes 12 seconds

= 7 : 07 : 12 a.m.

7. The maximum capacity of container = H.C.F. (403, 434, 465)

Factors of 403 = 13×31

Factors of 434 = $2 \times 7 \times 31$

Factors of 465 = $3 \times 5 \times 31$

H.C.F. = 31

Therefore, 31 liters of container is required to measure the quantity.

8. L.C.M. of 6, 15 and 18 = $2 \times 3 \times 3 \times 5 = 90$

Therefore the required number = $90 + 5 = 95$

| | |
|---|-----------|
| 2 | 8, 10, 12 |
| 2 | 4, 5, 6 |
| 2 | 2, 5, 3 |
| 3 | 1, 5, 3 |
| 5 | 1, 5, 1 |
| | 1, 1, 1 |

9. L.C.M. of 18, 24 and 32 = $2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 288$

The smallest four-digit number = 1000

$$\begin{array}{r} 3 \\ \text{Now, } 288 \overline{) 1000} \\ \underline{-864} \\ 136 \end{array}$$

Therefore, the required number is $1000 + (288 - 136) = 1152$.

| | |
|---|------------|
| 2 | 18, 24, 32 |
| 2 | 9, 12, 16 |
| 2 | 9, 6, 8 |
| 2 | 9, 3, 4 |
| 2 | 9, 3, 2 |
| 3 | 9, 3, 1 |
| 3 | 3, 1, 1 |
| | 1, 1, 1 |

10. (a) L.C.M. of 9 and 4

$$= 2 \times 2 \times 3 \times 3 = 36$$

| | |
|---|------|
| 2 | 9, 4 |
| 2 | 9, 2 |
| 3 | 9, 1 |
| 3 | 3, 1 |
| | 1, 1 |

(b) L.C.M. of 12 and 5

$$= 2 \times 2 \times 3 \times 5 = 60$$

| | |
|---|-------|
| 2 | 12, 5 |
| 2 | 6, 5 |
| 3 | 3, 5 |
| 5 | 1, 5 |
| | 1, 1 |

(c) L.C.M. of 6 and 5

$$= 2 \times 3 \times 5 = 30$$

| | |
|---|------|
| 2 | 6, 5 |
| 3 | 3, 5 |
| 5 | 1, 5 |
| | 1, 1 |

(d) L.C.M. of 15 and 4

$$= 2 \times 2 \times 3 \times 5 = 60$$

| | |
|---|-------|
| 2 | 15, 4 |
| 2 | 15, 2 |
| 3 | 15, 1 |
| 5 | 5, 1 |
| | 1, 1 |

Yes, the L.C.M. is equal to the product of two numbers in each case.

And L.C.M. is also the multiple of 3.

11. (a) L.C.M. of 5 and 20

$$= 2 \times 2 \times 5 = 20$$

| | |
|---|-------|
| 2 | 5, 20 |
| 2 | 5, 10 |
| 5 | 5, 5 |
| | 1, 1 |

(b) L.C.M. of 6 and 18

$$2 \times 3 \times 3 = 18$$

| | |
|---|-------|
| 2 | 6, 18 |
| 3 | 3, 9 |
| 3 | 1, 3 |
| | 1, 1 |

(c) L.C.M. of 12 and 48

$$2 \times 2 \times 2 \times 2 \times 3 = 48$$

| | |
|---|--------|
| 2 | 12, 48 |
| 2 | 6, 24 |
| 2 | 3, 12 |
| 2 | 3, 6 |
| 3 | 3, 3 |
| | 1, 1 |

(d) L.C.M. of 9 and 45

$$= 3 \times 3 \times 5 = 45$$

| | |
|---|-------|
| 3 | 9, 45 |
| 3 | 3, 15 |
| 5 | 1, 5 |
| | 1, 1 |

From these all cases, we can conclude that if the smallest number is the factor of the larger number, then the L.C.M. of these two numbers is equal to that of the larger number.

DELHI PUBLIC SCHOOL, GANDHINAGAR

CHAPTER 5: UNDERSTANDING ELEMENTARY SHAPES

MIND MAP

This chapter consists of seven different topics. The most probable questions from the examination point of view are given below.

TYPE: 1 LINE SEGMENT

Q.1. Draw a line segment of 6.5 cm.

TYPE: 2 ANGLES : TYPES AND MEASUREMENT

Q.1. What fraction of a clockwise revolution does the hour hand of a clock turn through, when it goes from 1 to 10 ?

Q.2. Where will the hand of a clock stop if it starts at 5 and makes $\frac{3}{4}$ of a revolution, clockwise?

Q. 3 What part of a revolution have you turned through if you stand facing south and turn clockwise to face east?

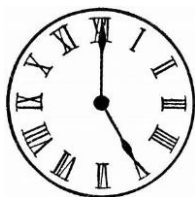
Q.4 How many right angles do you make if you start facing west and turn to west?

Q.5. Where will the hour hand of a clock stop if it starts from 8 and turns through 2 right angles?

Q.6. Measure the following angles using protractor and classify each as right, straight, acute, obtuse or reflex:

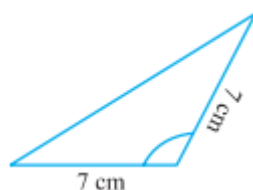
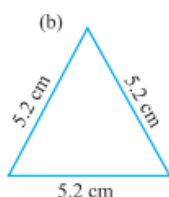


Q.7. Find the angle measure between the hands of the clock in each figure :



TYPE: 3 CLASSIFICATION OF TRIANGLES

Q.1. Name the types of following triangles in two different ways :
(a) $\triangle XYZ$ with $m \angle Y = 90^\circ$ and $XY = YZ$



TYPE: 4 QUADRILATERALS

Q.1. Give reason: A rectangle can be thought of as a special parallelogram.

TYPE: 5 POLYGONS

Q.1. Name a polygon with seven sides.

TYPE: 6 THREE DIMENSIONAL SHAPES

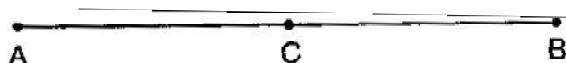
Q.1. Write number of faces, edges and vertices in

(a) Cube (b) Square Pyramid

Class -VI Mathematics (Ex. 5.1)

Answers

1. There may be chance of error due to improper viewing.
2. It is better to use a divider than a ruler, because the thickness of the ruler may cause difficulties in reading off her length. However divider gives up accurate measurement.
3. Yes.



$$AB = 6.5 \text{ cm}, AC = 3 \text{ cm}, CB = 3.5 \text{ cm}$$

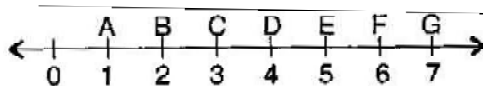
$$AC + CB = 3 \text{ cm} + 3.5 \text{ cm} = 6.5 \text{ cm} = AB$$

4. \overline{AC} is the longest line segment, thus B is the point between A and C.

5. $AD = 3$ units, $DG = 3$ units

$$AD = DG.$$

Thus, D is the mid-point.



6. B is the mid-point of \overline{AC} .

$$\therefore AB = BC \quad \text{.....(i)}$$

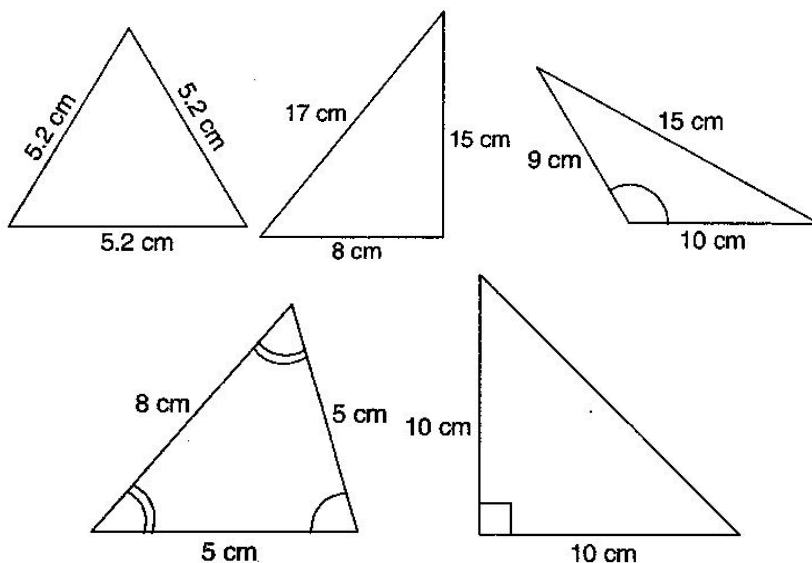
And C is the mid-point of \overline{BD} .

$$\therefore BC = CD \quad \text{.....(ii)}$$

From eq. (i) and (ii),

$$AB = CD$$

7. Yes, sum of two sides of a triangle is always greater than the third side.



Class -VI Mathematics (Ex. 5.2)

Answers

1. (a) $\frac{1}{2}$ or two right angles (b) $\frac{1}{4}$ or one right angle
(c) $\frac{1}{4}$ or one right angle (d) $\frac{3}{4}$ or three right angles.
(e) $\frac{3}{4}$ or three right angles. (f) $\frac{3}{4}$ or three right angles.
2. (a) At 6 (b) At 8 (c) At 8 (d) At 2
3. (a) West (b) West (c) North (d) South
(For answer (d), it is immaterial whether we turn clockwise or anticlockwise, because one full revolution will bring us back to the original position)
4. (a) $\frac{3}{4}$ (b) $\frac{3}{4}$ (c) $\frac{1}{2}$
5. (a) One right angle (b) Two right angles
(c) Two right angles (d) One right angle
(e) Three right angles (f) Two right angles
6. (a) One right angle (b) Three right angles
(c) Four right angles (d) Two right angles
7. (a) At 9 (b) At 2 (c) At 7 (d) At 7
-

Class -VI Mathematics (Ex. 5.3)

Answers

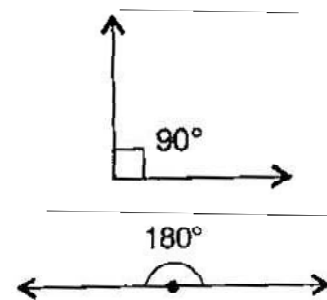
1. (i) → (c)
(ii) → (d)
(iii) → (a)
(iv) → (e)
(v) → (b)

2. (a) Acute angle
(b) Obtuse angle
(c) Right angle
(d) Reflex angle
(e) Straight angle
(f) Acute angle
-

Class -VI Mathematics (Ex. 5.4)

Answers

1. (i) 90°



(ii) 180°

2. (a) True (b) False (c) True (d) True (e) True

3. (a) $35^\circ, 20^\circ$ (b) $110^\circ, 135^\circ$

4. (a) 40° (b) 130° (c) 90° (d) 60°

5. $\angle B$ has larger measure.
 $\angle A = 40^\circ$ and $\angle B = 65^\circ$

6. Second angle has larger measure.

7. (a) acute angle (b) obtuse angle
(c) straight angle (d) acute angle
(e) obtuse angle

8. (i) 30° (ii) 120° (iii) 60° (iv) 150°

9. (i) 90° (Right angle) (ii) 30° (Acute angle) (iii) 180° (Straight angle)

10. No, the measure of angle will be same.

11. Sol.

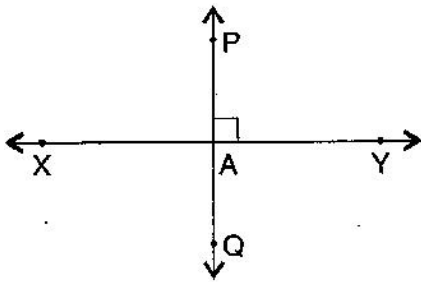
| | | | | | | |
|---------|--------------|--------------|--------------|--------------|--------------|--------------|
| Angle | $\angle AOB$ | $\angle AOC$ | $\angle BOC$ | $\angle DOC$ | $\angle DOA$ | $\angle DOB$ |
| Measure | 40° | 130° | 90° | 90° | 140° | 180° |
| Type | Acute | Obtuse | Right | Right | Obtuse | Striaight |

Class -VI Mathematics (Ex. 5.5)

Answers

1. (a) Perpendicular
(b) Not perpendicular
(c) Perpendicular
(d) Not perpendicular

2. Sol.



$$\angle PAY = 90^\circ$$

3. One set-square has $45^\circ, 90^\circ, 45^\circ$ and other set-square has $60^\circ, 90^\circ, 30^\circ$. They have 90° as common angle.
4. (a) Yes, both measure 2 units.
(b) Yes, because $CE = EG$
(c) \overline{DF} and \overline{CG} , \overline{BH}
(d) (i) True, (ii) True, (iii) True
-

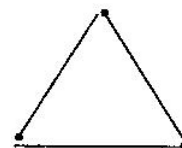
Class –VI Mathematics (Ex. 5.6)

Answers

1. (a) Scalene triangle (b) Scalene triangle
(c) Equilateral triangle (d) Right-angled triangle
(e) Isosceles right-angled triangle (f) Acute-angled triangle
2. (i) \rightarrow (e), (ii) \rightarrow (g), (iii) \rightarrow (a), (iv) \rightarrow (f), (v) \rightarrow (d), (vi) \rightarrow (c), (vii) \rightarrow (b)
3. (a) Acute angled triangle and Isosceles triangle
(b) Right-angled triangle and Scalene triangle
(c) Obtuse-angled triangle and Isosceles triangle
(d) Right-angled triangle and Isosceles triangle
(e) Equilateral triangle and acute angled triangle
(f) Obtuse-angled triangle and scalene triangle

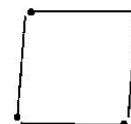
4. (a) 3 matchsticks

This is an acute angle triangle and it is possible with 3 matchsticks to make a triangle because sum of two sides is greater than third side.



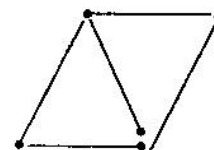
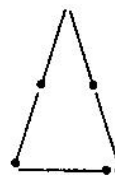
- (b) 4 matchsticks

This is a square, hence with four matchsticks we cannot make triangle.



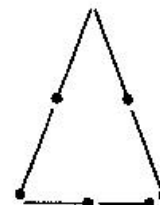
- (c) 5 matchsticks

This is an acute angle triangle and it is possible to make triangle with five matchsticks, in this case sum of two sides is greater than third side.



- (d) 6 matchsticks

This is an acute angle triangle and it is possible to make a triangle with the help of 6 matchsticks because sum of two sides is greater than third side.



Class -VI Mathematics (Ex. 5.7)

Answers

1. (a) True (b) True
(c) True (d) True
(e) False (f) False
 2. (a) Because its all angles are right angle and opposite sides are equal.
(b) Because its opposite sides are equal and parallel.
(c) Because its four sides are equal and diagonals are perpendicular to each other.
(d) Because all of them have four sides.
(e) Because its opposite sides are equal and parallel.
 3. A square is a regular quadrilateral.
-

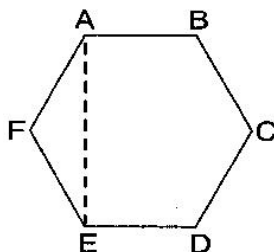
Class –VI Mathematics (Ex. 5.8)

Answers

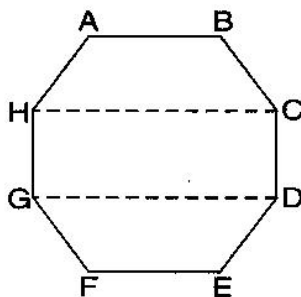
1. (a) As it is not a closed figure, therefore, it is not a polygon.
(b) It is a polygon because it is closed by line segments.
(c) It is not a polygon because it is not made by line segments.
(d) It is not a polygon because it not made only by line segments, it has curved surface also.

2. (a) Quadrilateral (b) Triangle
(c) Pentagon (d) Octagon

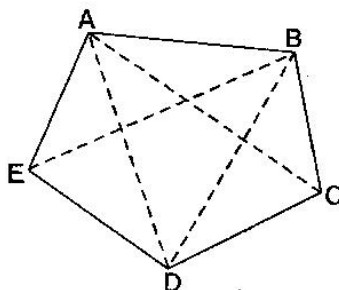
3. ABCDEF is a regular hexagon and triangle thus formed by joining AEF is an isosceles triangle.



4. ABCDEFGH is a regular octagon and CDGH is a rectangle.



5. ABCDE is the required pentagon and its diagonals are AD, AC, BE and BD.



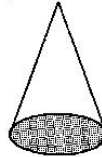
Class –VI Mathematics (Ex. 5.9)

Answers

1. Sol.

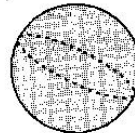
(a) Cone

(ii)



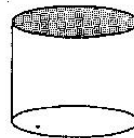
(b) Sphere

(iv)



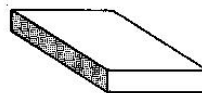
(c) Cylinder

(v)



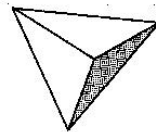
(d) Cuboid

(iii)



(e) Pyramid

(i)



2. (a) Cuboid
(b) Cuboid
(c) Cuboid
(d) Cylinder
(e) Sphere

DELHI PUBLIC SCHOOL, GANDHINAGAR

CHAPTER – 6 INTEGERS

MIND MAP

This chapter consists of four different topics. The most probable questions from the examination point of view are given below.

TYPE: 1

Q1. On a number line represent

a) (-5)

b) $+7$

c) 5 more than (-4)

d) 9 less than 7

TYPE: 2

Q1. Add

a) $12 + (-5) - (+8)$

b) $16, (-8), +5, 110$

TYPE: 3

Q1. Subtract:

a) (-32) from (-18)

b) $+12, (-6), (+14), 56$

Q2. Find:

a) $(-7) - 8 - (-20)$

b) $(-13) + 32 - 8 - 2$

c) $(-56) + (-8) + (-80)$

d) $50 - (-40) - (-2)$

TYPE:4

Q1. Compare:

a) $134 + 54 - (-62)$ and $+123 - (+76) + (+42)$

b) $(-11) + (-2) + (-1) = \dots\dots\dots$

c) $(-80) + 0 + (-90) = \dots\dots\dots$

d) $(-2) + (-5) + (-6) \dots\dots\dots (-3) + (-4) + (-6)$

Class –VI Mathematics (Ex. 6.1)

Questions

1. Write opposite of the following:

- | | |
|---------------------------|-------------------|
| (a) Increase in weight | (b) 30 km north |
| (c) 326 BC | (d) Loss of ₹ 700 |
| (e) 100 m above sea level | |

2. Represent the following numbers as integers with appropriate signs.

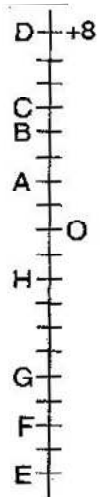
- (a) An aeroplane is flying at a height two thousand meters above the ground.
 (b) A submarine is moving at a depth eight thousand meters below the sea level.
 (c) A deposit of rupees two hundred.
 (d) Withdrawal of rupees seven hundred.

3. Represent the following numbers on number line:

- (a) +5 (b) -10 (c) +8 (d) -1 (e) -6

4. Adjacent figure is a vertical number line, representing integers. Observe it and locate the following points:

- (a) If point D is +8 then which point is -8?
 (b) Is point G a negative integer or a positive integer?
 (c) Write integers for points B and E.
 (d) Which point marked on this number line has the least value?
 (e) Arrange all the points in decreasing order of values.



5. Following is the list of temperatures of five places in India, on a particular day of the year.

| Place | Temperature | |
|-----------|----------------|-------|
| Siachin | 10°C below 0°C | _____ |
| Shimla | 2°C below 0°C | _____ |
| Ahmedabad | 30°C above 0°C | _____ |
| Delhi | 20°C above 0°C | _____ |
| Srinagar | 5°C below 0°C | _____ |

(a) Write the temperature of these places in the form of integers in the blank column.

(b) Following is the number line representing the temperature in degree Celsius.



Plot the name of the city against its temperature.

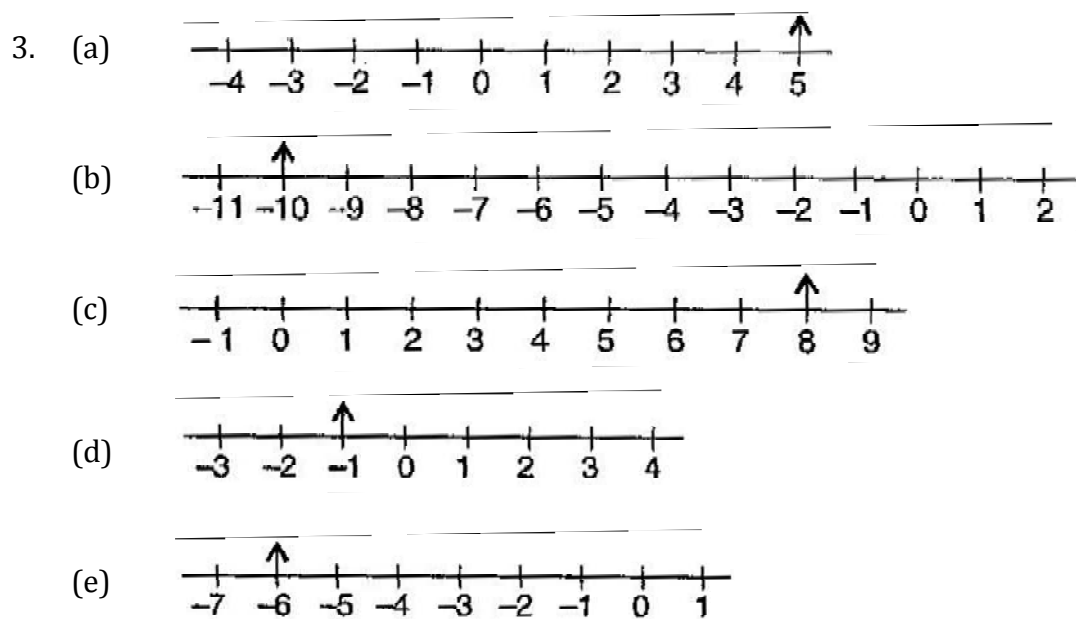
-
- (c) Which is the coolest place?
(d) Write the names of the place where temperature are above 10°C .
6. In each of the following pairs, which number is to the right of the other on the number line?
(a) 2, 9 (b) -3, -8 (c) 0, -1
(d) -11, 10 (e) -6, 6 (f) 1, -100
7. Write all the integers between the given pairs (write them in the increasing order):
(a) 0 and -7 (b) -4 and 4
(c) -8 and -15 (d) -30 and -23
8. (a) Write four negative integers greater than -20.
(b) Write four negative integers less than -10.
9. For the following statements write True (T) or False (F). If the statement is false, correct the statement:
(a) -8 is to the right of -10 on a number line.
(b) -100 is the right of -50 on a number line.
(c) Smallest negative integer is -1.
(d) -26 is larger than -25.
10. Draw a number line and answer the following:
(a) Draw a number line will we reach if we move 4 numbers to the right of -2.
(b) Which number will we reach if we move 5 numbers to the left of 1.
(c) If we are at -8 on the number line, in which direction should we move to reach -13?
(d) If we are at -6 on the number line, in which direction should we move to reach -1?
-

Class -VI Mathematics (Ex. 6.1)

Answers

1. (a) Decrease in weight (b) 30 km south
(c) 326 AD (d) Profit of ₹ 700
(e) 100 m below sea level

2. (a) (+) 200 meters (b) (-) 800 meters
(c) (+) 200 Rupees (d) (-) 700 Rupees

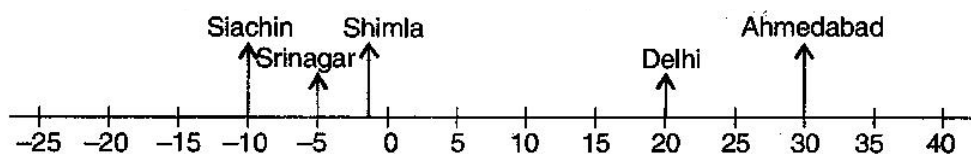


4. (a) F (b) Negative
(c) B = (+) 4; E = (-) 10 (d) E
(e) D, C, B, A, O, H, G, F, E

5. **Place** **Temperature**

- | | |
|-------------|----------|
| (a) Siachin | (-) 10°C |
| Shimla | (-) 2°C |
| Ahmedabad | (+) 30°C |
| Delhi | (+) 20°C |
| Srinagar | (-) 5°C |

(b) Number line

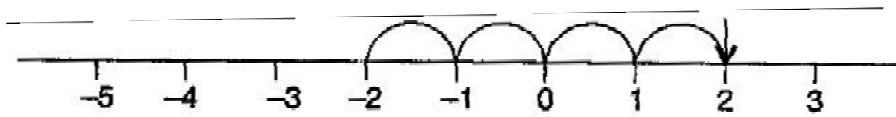


(c) Siachin

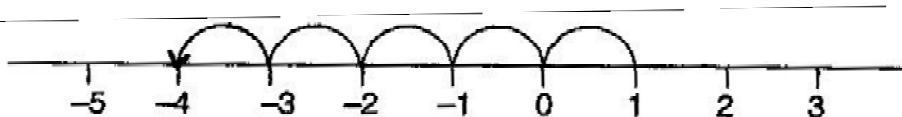
(d) Ahemadabad, Delhi

6. (a) 9 is right to 2 (b) -3 is right to -8
(c) 0 is right to -1 (d) 10 is right to -11
(e) 6 is right to -6 (f) 1 is right to -100
7. (a) -6, -5, -4, -3, -2, -1 (b) -3, -2, -1, 0, 1, 2, 3
(c) -14, -13, -12, -11, -10, -9 (d) -29, -28, -27, -26, -25, -24
8. (a) -19, -18, -17, -16 (b) -11, -12, -13, -14
9. (a) True (b) False (c) False (d) False

10. (a)



(b)



- (c) On left side
(d) On right side
-

Class -VI Mathematics (Ex. 6.2)

Questions

1. Using the number line write the integer which is:
(a) 3 more than 5
(b) 5 more than -5
(c) 6 less than 2
(d) 3 less than -2

 2. Use number line and add the following integers:
(a) $9 + (-6)$
(b) $5 + (-11)$
(c) $(-1) + (-7)$
(d) $(-5) + 10$
(e) $(-1) + (-2) + (-3)$
(f) $(-2) + 8 + (-4)$

 3. Add without using number line:
(a) $11 + (-7)$
(b) $(-13) + (+18)$
(c) $(-10) + (+19)$
(d) $(-250) + (+150)$
(e) $(-380) + (-270)$
(f) $(-217) + (-100)$

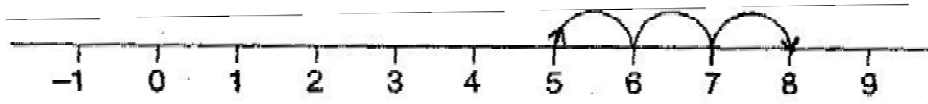
 4. Find the sum of:
(a) 137 and -354
(b) -52 and 52
(c) -213, 39 and 192
(d) -50, -200 and 300

 5. Find the value of:
(a) $(-7) + (-9) + 4 + 16$
(b) $37 + (-2) + (-65) + (-8)$
-

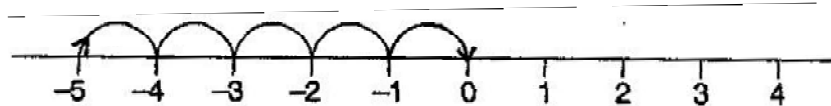
Class -VI Mathematics (Ex. 6.2)

Answers

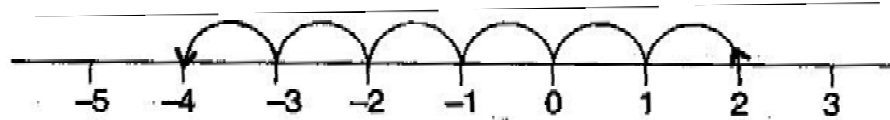
1. (a) 8



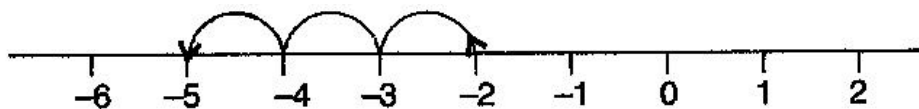
(b) 0



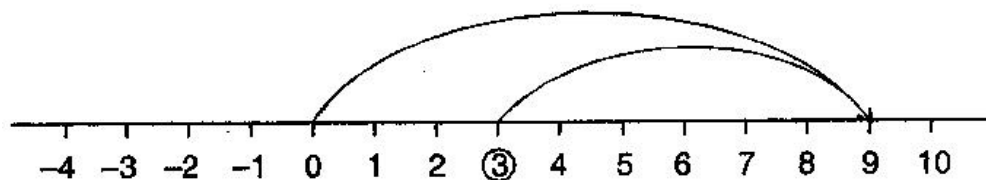
(c) -4



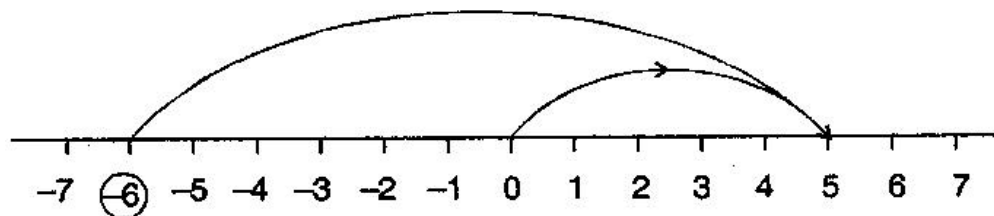
(d) -5



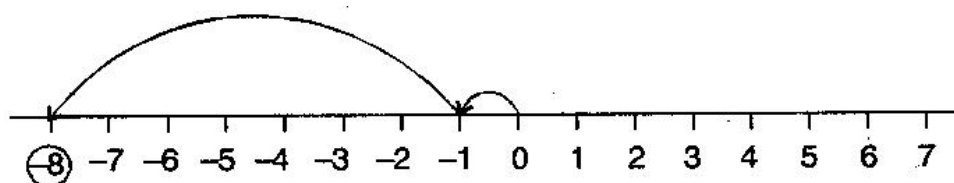
2. (a) $9 + (-6) = 3$



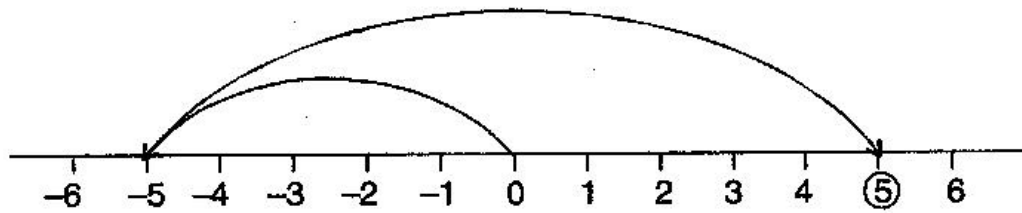
(b) $5 + (-11) = -6$



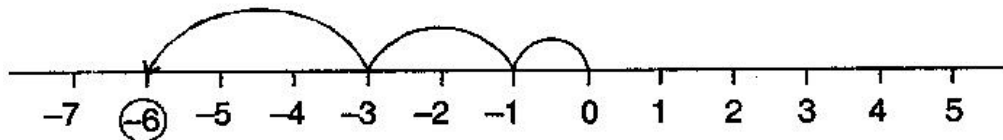
(c) $(-1) + (-7) = -8$



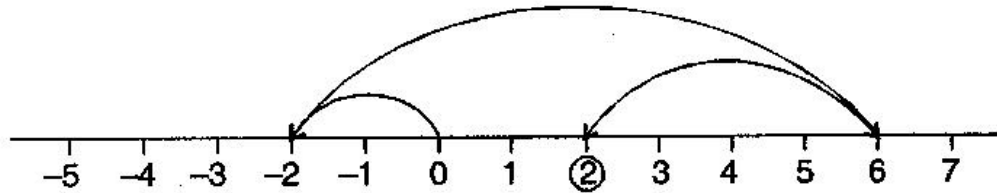
(d) $(-5) + 10 = 5$



(e) $(-1) + (-2) + (-3) = -6$



(f) $(-2) + 8 + (-4) = 2$



3. (a) $11 + (-7) = 11 - 7 = 4$ (b) $(-13) + 18 = 5$
 (c) $(-10) + (+19) = -10 + 19 = 9$ (d) $(-250) + (+150) = -250 + 150 = -100$
 (e) $(-380) + (-270) = -380 - 270 = -650$ (f) $(-217) + (-100) = -217 \vee 100 = -317$

4. (a) $137 + (-354) = 137 - 354 = -217$
 (b) $(-52) + 52 = 0$
 (c) $(-312) + 39 + 192 = -312 + 231 = -81$
 (d) $(-50) + (-200) + 300 = -50 - 200 + 300 = -250 + 300 = 50$

5. (a) $(-7) + (-9) + 4 + 16$
 $= -7 - 9 + 4 + 16$
 $= -16 + 20$
 $= 4$

- (b) $37 + (-2) + (-65) + (-8)$
 $= 37 - 2 - 65 - 8$
 $= 37 - 75$
 $= -38$

Class -VI Mathematics (Ex. 6.3)

Questions

1. Subtract:

(a) $35 - (20)$

(b) $72 - (90)$

(c) $(-15) - (-18)$

(d) $(-20) - (13)$

(e) $23 - (-12)$

(f) $(-32) - (-40)$

2. Fill in the blanks with $>$, $<$ or $=$ sign:

(a) $(-3) + (-6)$ _____ $(-3) - (-6)$

(b) $(-21) - (-10)$ _____ $(-31) + (-11)$

(c) $45 - (-11)$ _____ $57 + (-4)$

(d) $(-25) - (-42)$ _____ $(-42) - (-25)$

3. Fill in the blanks:

(a) $(-8) + \underline{\hspace{2cm}} = 0$

(b) $13 + \underline{\hspace{2cm}} = 0$

(c) $12 + (-12) = \underline{\hspace{2cm}}$

(d) $(-4) + \underline{\hspace{2cm}} = -12$

(e) $\underline{\hspace{2cm}} - 15 = -10$

4. Find:

(a) $(-7) - 8 - (-25)$

(b) $(-13) + 32 - 8 - 1$

(c) $(-7) + (-8) + (-90)$

(d) $50 - (-40) - (-2)$

Class -VI Mathematics (Ex. 6.3)

Answers

1. (a) $35 - 20 = 15$
(c) $(-15) - (-18) = -15 + 18 = 3$
(e) $23 - (-12) = 23 + 12 = 35$
- (b) $72 - 90 = -18$
(d) $-20 - (13) = -20 - 13 = -33$
(f) $(-32) - (-40) = -32 + 40 = 8$
2. (a) $(-3) + (-6) \boxed{<} (-3) - (-6)$
(b) $(-21) - (-10) \boxed{>} (-31) + (-11)$
(c) $45 - (-11) \boxed{>} 57 + (-4)$
(d) $(-25) - (-42) \boxed{>} (-42) - (-25)$
3. (a) $(-8) + \underline{8} = 0$
(b) $13 + \underline{(-13)} = 0$
(c) $12 + \underline{(-12)} = \underline{0}$
(d) $(-4) + \underline{(-8)} = -12$
(e) $\underline{5} - 15 = -10$
4. (a) $(-7) - 8 - (-25)$
 $= -7 - 8 + 25$
 $= -15 + 25$
 $= 10$
- (b) $(-13) + 32 - 8 - 1$
 $= -13 + 32 - 8 - 1$
 $= 32 - 22$
 $= 10$
- (c) $(-7) + (-8) + (-90)$
 $= -7 - 8 - 90$
 $= -105$
- (d) $50 - (-40) - (-2)$
 $= 50 + 40 + 2$
 $= 92$
-