NEW ERA PUBLIC SCHOOL RAJBAGH SRINAGAR

SUBJECT :- MATH :- A/B CLASS :- 6TH

MATH :- A UNIT 2nd

CHAPTER :- 02 [WHOLE NUMBERS]

Solved ASSIGNMENT OF UNIT 2nd [2021]

Exercise 2.1

Q=1 Write

(a) The Smallest natural number → 1

(b) The Smallest whole number → 0

(c) The Successor of 0 → 1

(d) The Predecessor of 10 → 9

Q=2 Which of the following statements are true (T) and which are false (F)?

Solution (a) F (b) F (c) T (d) T (e) T (f) F

(g) F (h) F (i) T (j) F (k) F (l) T (m) F

Q=3 Write the successor of:

(a) 2,130 = 2130+1 = 2,131

(b) 11,759 = 11759+1 = 11,760

(c) 10,19,999 = 10,19,999+1 = 10,20,000

Q=4 Write the predecessor of:

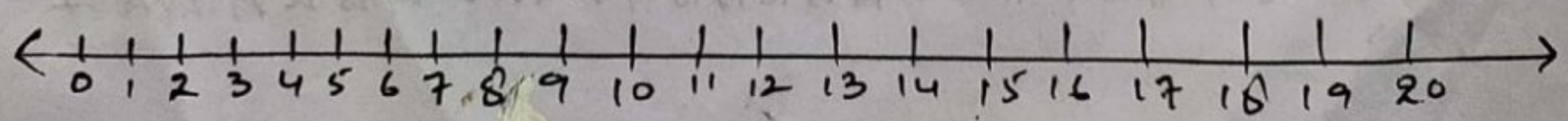
(a) 76,605 = 76,605-1 = 76,604

(b) 10,00,000 = 10,00,000-1 = 9,99,999

(c) 71,14,031 = 71,14,031-1 = 71,14,030

Q=5 Draw a number line and mark on it numbers from 0 to 20.

Solution:-



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Q=6 How many whole numbers are there from 128 to 500?

Solution There are 373 whole numbers from 128 to 500.

500
-128
372

372
+1
373

Q=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) (623, 236)

Solution 623 > 236 (so, 236 is on the left of 623)

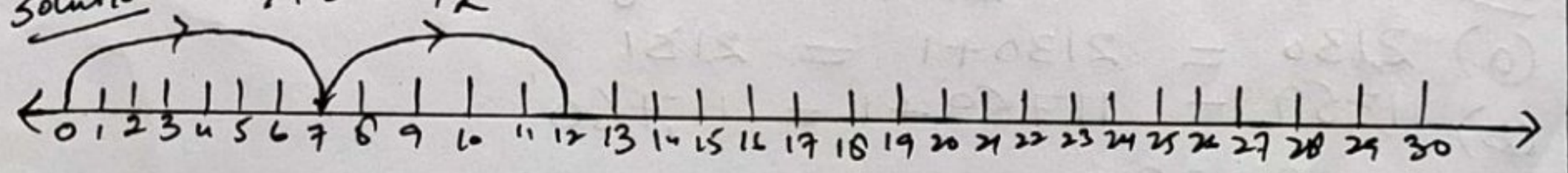
(c) (98,716, 76,819)

Sol. 98,716 > 76,819 (so, 76,819 is on the left of 98,716)

Q=8 Draw a number line with markings numbers from 0 To 30. Using it find:

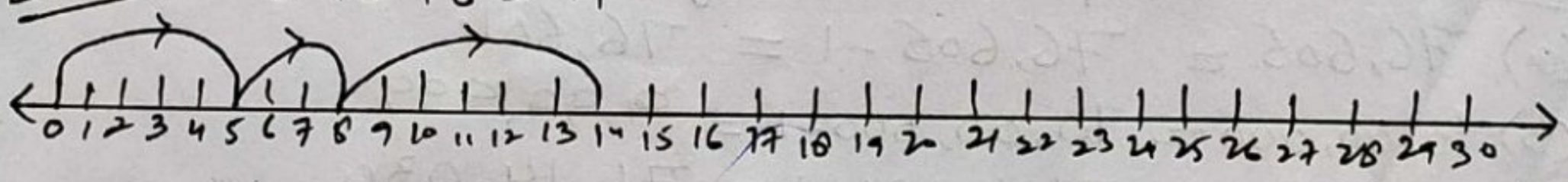
(a) 7+5

Solution 7+5 = 12



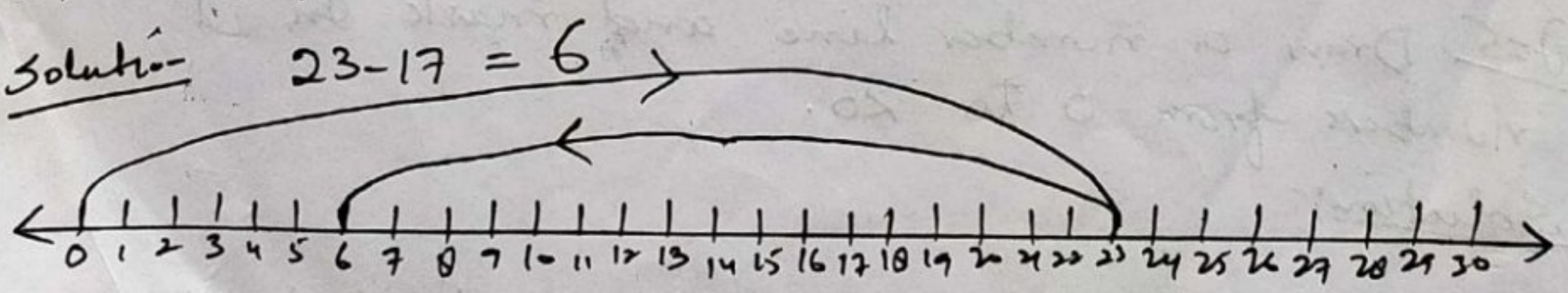
(c) 5+3+6

Solution 5+3+6 = 14



(e) 23-17.

Solution 23-17 = 6



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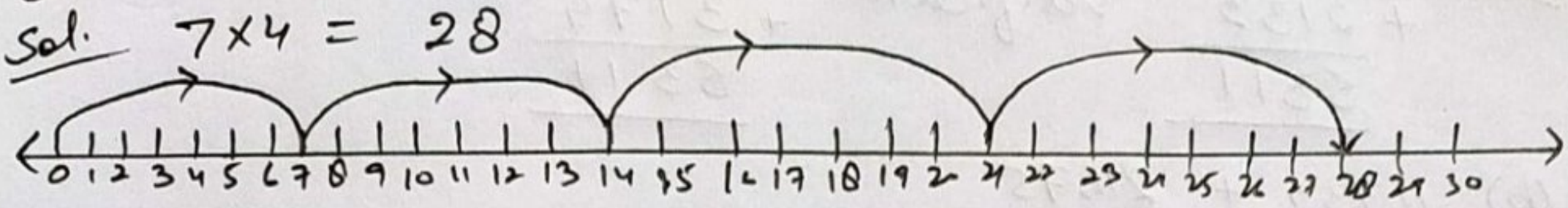
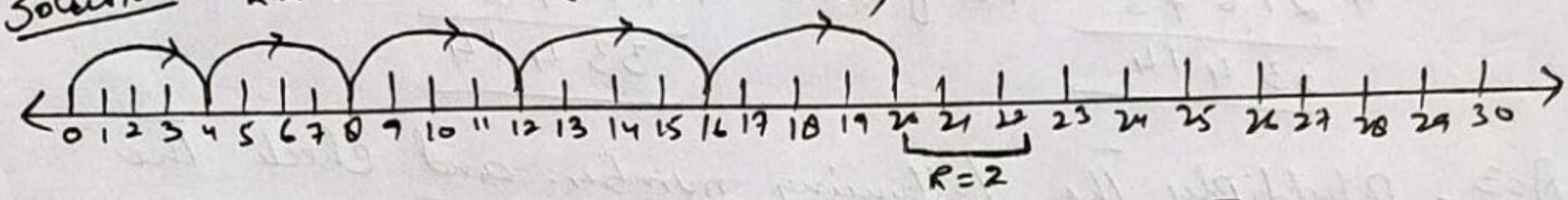
(g) 7×4

Sol. $7 \times 4 = 28$



(i) $22 \div 4$

Solution $22 \div 4 = 5$ (Remainder 2)



Q=9 Write the next three whole numbers after 7,989.

Solution Next three whole numbers after 7989 are

$7989 + 1 = 7,990$

$7990 + 1 = 7,991$

$7991 + 1 = 7,992$

So, 7990, 7991, 7992 are the required numbers.

Q=10 Write the three whole numbers occuring just before 20,000.

Solution Three whole numbers occuring just before 20,000 are.

$20,000 - 1 = 19,999$

$19,999 - 1 = 19,998$

$19,998 - 1 = 19,997$

So, 19,999, 19,998, 19,997 are the required numbers.

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Exercise No. 2.2.

Q1 Fill in the blanks to make each of the following a true statement:

Solution (a) 748 (b) 536 (c) 7092 (d) 341 (e) 2567

(f) 0 (g) 789 (h) 313 (i) 266 + 34 (j) $1067 \times 979 = 979 \times 1067$

Q2 Add the following numbers and check the answer by reversing the order of the two numbers.

(a) 3179 and 2132

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Solution- 3179
+ 2132
5311

Verification- 2132
+ 3179
5311

(b) 11739 + 21675

Solution- 11739
+ 21675
33414

verification- 21675
+ 11739
33414

Q=3 Multiply the following numbers and check the answer by reversing the order of the two numbers.

(a) 367 and 205

Solution- 367 × 205
1835
000×
734××
75235

Verification- 205 × 367
1435
1230×
615××
75235

Q=4 Find the sum: (1547 + 373) + 905
Also, find the sum: 1547 + (373 + 905)
Are the two answers same? State the property involved.

Solution- (1547 + 373) + 905
= 1920 + 905
= 2825

Also 1547 + (373 + 905)
= 1547 + 1278
= 2825

Answers are same. The property is associative property.

Q=5 Find the following products:

(a) 4 × 957 × 25 → (957 × 4) × 25

Solution- 957 × 4
3828

→ 3828 × 25
19140
7656×
95700

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(b) $8 \times 176 \times 125$

$= (176 \times 8) \times 125$

$= 1408 \times 125$

$= 1,76,000$

1408×125

7040

2816x

1408xx

176000

Q=6 Determine the following products by suitable re-arrangement.

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

Solution- $(125 \times 8) \times (25 \times 40)$

$= 1000 \times 1000$

$= 10,00,000$

(c) $285 \times 25 \times 9 \times 40$

Solution- $(25 \times 40) \times (285 \times 9)$

$= 1000 \times 2565$

$= 25,65,000$

Q=7 Using the distributive properties, simplify each of the following:

(a) 103×95

Sol: $(100+3) \times 95$

$= (95 \times 100) + (95 \times 3)$

$= 9500 + 285$

$= 9785$

(c) 783×1001

Sol. $783 \times (1000+1)$

$= (783 \times 1000) + (783 \times 1)$

$= 783000 + 783$

$= 7,83,783$

(e) $(603 \times 8) + (603 \times 2)$

Sol. $603 \times (8+2)$

$= 603 \times 10$

$= 6030$

(g) $874 \times 6 + 874 \times 3 + 874$

Sol. $(874 \times 6) + (874 \times 3) + (874 \times 1)$

$= 874 \times (6+3+1)$

$= 874 \times 10$

$= 8740$

Q=8 Using the distributive property, multiply:

(a) 475 by 64

Sol. 475×64

$= 475 \times (60+4)$

$= (475 \times 60) + (475 \times 4)$

$= 28500 + 1900$

$= 30,400$

(b) 5217 by 325

Sol. 5217×325

$= 5217 \times (300+25)$

$= (5217 \times 300) + (5217 \times 25)$

$= 1565100 + 130425$

$= 16,95,525$

[NOTE:- Rest of the parts do your self]

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Q=9 Determine the product of:

(a) Greatest 3-digit and greatest 4-digit numbers.

Solution Greatest 3-digit number = 999

Greatest 4-digit number = 9999

$= 999 \times 9999$

$= (1000-1) \times 9999$

$= (9999 \times 1000) - (999 \times 1)$

$= 9999000 - 999$

$= 99,89,001$

(b) Smallest 4-digit number and greatest 4-digit nos.

Solution Smallest 4-digit number = 1000

Greatest 4-digit number = 9999

$= 1000 \times 9999$

$= 9999000$

Q=10 If the product of two whole numbers is Zero, what do you conclude?.

Solution One of the number must be Zero (0).

Q=11 What are the whole numbers which when multiplied with itself gives the same number?.

Solution 0 and 1 are the required numbers because $(0 \times 0 = 0)$ and $(1 \times 1 = 1)$

Q=12 Match the following

Solution (a) with (ii)	(g) with (i)
(b) with (vii)	
(c) with (vi)	
(d) with (iii)	
(e) with (iv)	
(f) with (v)	

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Exercise 2.3

Q=1 Given

$1+2+3+4+5+\_\_\_\_+9=45$

$11+12+13+14+15+\_\_\_\_+19=135=10\times9+45=135$

$21+22+23+24+25+\_\_\_\_+29=20\times9+45=225$

$31+32+33+34+35+\_\_\_\_+39=30\times9+45=315$

Find (a) $71+72+73+74+75+\_\_\_\_+79$

Sol. $71+72+73+74+75+76+\_\_\_\_+79=70\times9+45$

$71+72+73+74+75+\_\_\_\_+79=630+45$

$71+72+73+74+75+\_\_\_\_+79=675$

(b) $101+102+\_\_\_\_+109$

Sol. $101+102+103+104+105+\_\_\_\_+109=100\times9+45$

$101+102+103+104+105+\_\_\_\_+109=900+45$

$101+102+103+104+105+\_\_\_\_+109=945$

Q=2 Given

$0\times9+1=1$

$1\times9+2=11$

$12\times9+3=111$

$123\times9+4=1111$

Find (a) $123456\times9+7=1111111$

(b) $12345678\times9+9=111111111$

Q=3 Given

$1+3=4=2\times2$

$1+3+5=9=3\times3$

$1+3+5+7=16=4\times4$

$1+3+5+7+9=25=5\times5$

Find (a) $1+3+5+7+9+11+13$.

Sol. $1+3+5+7+9+11+13=49=7\times7$

(b) $1+3+5+7+9+11+13+15+17+19+21$

Sol. $1+3+5+7+9+11+13+15+17+19+21=121=11\times11$

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Q=4 Given

$$(1\times2)+(2\times3)=\frac{2\times3\times4}{3}$$

$$(1\times2)+(2\times3)+(3\times4)=\frac{3\times4\times5}{3}$$

$$(1\times2)+(2\times3)+(3\times4)+(4\times5)=\frac{4\times5\times6}{3}$$

Find (a) $(1\times2)+(2\times3)+(3\times4)+(4\times5)+(5\times6)$

Sol. $(1\times2)+(2\times3)+(3\times4)+(4\times5)+(5\times6)=\frac{5\times6\times7}{3}$

(b) $(1\times2)+(2\times3)+(3\times4)+$ ___ $+(10\times11)$

Sol. $(1\times2)+(2\times3)+(3\times4)+$ ___ $+(10\times11)=\frac{10\times11\times12}{3}$

Q25 Given

$\frac{5\times5}{25}$ $\frac{15\times15}{225}$ $\frac{25\times25}{625}$ $\frac{35\times35}{1225}$

Find (a) 45×45 (c) 95×95

Sol. $\frac{45\times45}{225}$

225
180x
2025

Sol. $\frac{95\times95}{475}$

475
855x
9025

Q=6 Given

$37\times3=111$
$37\times6=222$
$37\times9=333$
$37\times12=444$

Find (a) $37\times18=666$
(b) $37\times27=999$

Rough.

37×18
296
37x
666

37×27
259
74x
999

[Sharpen your Understanding On Book. Page no. → 43
(Rest of the parts do your self.)]

Chapter :- 3 [PLAYING WITH NUMBERS]

Exercise 3.1

Q=1 Is 7 a factor of 14 ?

Solution: $14 \div 7 = 2$, Remainder 0

As remainder is 0, 7 is a factor of 14.

Q=2 Is 6 a factor of 20 ?

Solution:- $20 \div 6 = 3$, Remainder 2

As remainder is not 0, 6 is not a factor of 20.

Q=3 Is 9 a factor of 54 ?

Solution:- $54 \div 9 = 6$, Remainder 0

As remainder is 0, 9 is a factor of 54.

Q=4 Do your self.

Q=5 Encircle the factors of 14.

2 6 3 14 1 7

Solution:- (2) 6 3 (14) (1) (7)

Q=6 Encircle the factors of 100.

3 5 8 10 9 12 24

Solution:- 3 (5) 8 (10) 9 12 24

Q=7 Write all the factors of :

(a) 10

Solution:- Factors of 10

(1×10), (2×5)

So 1, 2, 5, 10 are the factors.

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(e) 63

Solution Factors of 63

(1×63), (3×21), (7×9)

So, 1, 3, 7, 9, 21 and 63 are the factors.

(g) 77

Solution Factors of 77

(1×77), (7×11)

So, 1, 7, 11 and 77 are the factors.

(i) 144

Solution Factors of 144

(1×144), (2×72), (3×48), (4×36), (6×24), (8×18), (12×12)

So, 1, 2, 3, 4, 6, 8, 12, 18, 24, 36, 48, 72 and 144 are the factors.

[NOTE:- Rest of the parts do your self]

Exercise 3.2

Q=1 Fill in the blanks by writing 'Yes' or 'No'

(a) Is 8 a multiple of 12? No

(b) Is 12 a multiple of 8? No

(c) Is 16 a multiple of 16? Yes

Q=2 Fill in the blanks by writing 'True' or 'False'

(a) 4 is a multiple of 8. False

(b) 24 is a multiple of 4, 6, 8 and 12 True

(c) 400 is a multiple of 10, 20 and 40 True

(d) 36 is a multiple of 3 and 6 True.

Q=3 Encircle the multiples of 7

Solution (21) 50 (7) 35 62 71

Q=4 List to multiples of 6 that are less than 100

Solution List of multiples of 6 that are less than 100:

6, 12, 18, 24, 30, 36, 42, 48, 54, 60

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(b) List 10 multiples of 15 that are less than 200.

Sol. 15, 30, 45, 60, 75, 90, 105, 120, 135, 150

(c) List 5 multiples of 25 that are less than 500.

Sol. 25, 50, 75, 100, 125.

Q=5 What is the greatest multiple of 4 which is less than 100 ?.

Sol. 96 is the greatest multiple of 4 which is less than 100.

Q=6 What is the Smallest multiple of 100 which is greater than 1000?

Sol. 1100 is the Smallest multiple of 100 which is greater than 1000.

Q=7 Match each number with the correct box. which number is both a factor and a multiple of 24?.

240 8 48 4 96 24 1 2

120 3 72 144 6 12

Solution

Multiples of 24	Factors of 24
240	8
48	4
96	24
120	1
24	2
72	3
144	6
	12
	24

24 is the only number which is both a factor as well as a multiple of 24.

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Exercise 3.3

Q=1 List all the even numbers from 2 to 20.

Solution All even numbers from 2 to 20:

2, 4, 6, 8, 10, 12, 14, 16, 18, 20

Q=2 List all the odd numbers from 31 to 50.

Solution All odd numbers from 31 to 50:

31, 33, 35, 37, 39, 41, 43, 45, 47, 49

Q=3 When you add an even number to another even number, do you always get an even number?

Solution Yes, example [2+6=8], [22+28=50]

Q=4 When you add an odd number to an even number do you always get an even number?

Solution No, example [2+9=11], [13+18=31]

Q=5 What is the sum of any two odd numbers?

Solution Sum of any two odd numbers is always an even number. Example [17+9=28], [3+13=16]

Q=6 List all the prime numbers which are:

(a) Less than 15 (b) Less than 40 (c) Less than 70

Solution The required prime numbers which are less than

(a) 15 is 2, 3, 5, 7, 11, 13

(b) 40 is 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37

(c) 70 is 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67

Q=7 List all the 3-digit numbers, less than 200

Solution List of all the 3-digit prime numbers less than 200 is 101, 103, 107, 109, 113, 127, 131, 133, 137, 139, 157, 161, 163, 167, 169, 173, 179, 181, 187, 191, 193, 197, 199

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Q=8 Here is a list of pairs of numbers
(51, 57), (63, 65), (59, 61), (67, 69), (71, 73), (101, 107)
(179, 181) Categorise these as pairs of
(a) prime numbers (b) composite numbers.

Solution- (a) prime numbers (59, 61), (71, 73), (101, 107), (179, 181)
(b) Composite numbers (51, 57), (63, 65)

Q=9 Twin primes are two primes that differ by 2. Using The Sieve Eratosthenes, find the pairs of twin primes between 1 and 100.

Solution Twin Primes between 1 and 100 are
(3, 5), (5, 7), (11, 13), (17, 19), (29, 31), (41, 43), (59, 61), (71, 73)

Q=10 If you reverse the digits of a prime number, do you always get a prime number? Write examples.

Solution No, Example $19 \rightarrow 91 \rightarrow$ not Prime
$11 \rightarrow 11 \rightarrow$ Prime
$87 \rightarrow 78 \rightarrow$ not Prime
$71 \rightarrow 17 \rightarrow$ Prime

Q=11 From the Sieve of Eratosthenes, find the pairs of primes, both the numbers are formed of the same digits like 17 and 71.

Solution (17, 71), (13, 31), (37, 73), (79, 97)

Q=12 Determine prime numbers between 1 and 100 which are the sum of two square numbers.

Solution Example $5 = 2^2 + 1^2 \rightarrow [4+1=5]$
$29 = 5^2 + 2^2 \rightarrow [25+4=29]$
$37 = 6^2 + 1^2 \rightarrow [36+1=37]$
$53 = 7^2 + 2^2 \rightarrow [49+4=53]$
$73 = 8^2 + 3^2 \rightarrow [64+9=73]$

Q=13 Find 2, 3 or 4 prime numbers which have a total of 78.

Solution $37 + 41 = 78$

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$2+23+53=78$

$13+7+17+41=78$

Q=14 Express each of the following numbers as the sum of two odd primes.

Solution (a) $44 = 13+31$ (c) $36 = 23+13$

Q=15 Express each of the following numbers as the sum of three odd numbers.

Solution (a) $21 = 3+5+13$ (c) $53 = 5+9+39$

Q=16 Write any five pairs of Prime numbers less than 50 whose sum is exactly divisible by 5

Solution (7 and 3) → 7+3 = 10 → divisible by 5
(17 and 3) → 17+3 = 20 → divisible by 5
(23 and 7) → 23+7 = 30 → divisible by 5
(43 and 2) → 43+2 = 45 → divisible by 5
(11 and 19) → 11+19 = 30 → divisible by 5

Q=17 Write any seven consecutive composite numbers each less than 100, so that there is no prime number between them.

Solution 90, 91, 92, 93, 94, 95, 96 are seven consecutive no's each less than 100.

Q=18 Write all pairs of prime numbers up to 100, between which there are exactly five composite numbers.

Solution

Pairs of Prime no's		Composite numbers.
i) (23, 29)	→	24, 25, 26, 27, 28
ii) (31, 37)	→	32, 33, 34, 35, 36
iii) (61, 67)	→	62, 63, 64, 65, 66
iv) (73, 79)	→	74, 75, 76, 77, 78
v) (83, 89)	→	84, 85, 86, 87, 88
vi) (47, 53)	→	48, 49, 50, 51, 52
vii) (53, 59)	→	54, 55, 56, 57, 58

Q=19 State whether the following statements are True or false:

Solution (a) T (b) T (c) T (d) F (e) F (f) F (g) F (h) T
(i) F (j) T

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Q=20 Fill in the blanks

Solution (a) Prime number (b) Composite number (c) Prime not composite (d) 2 (e) 4 (f) 2

Q=21 A set of three consecutive prime numbers differ by 2, is called a prime triplet. Find a prime triplet?

Solution Prime triplet : (3, 5, 7)

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Exercise 3.4

Q=1 Test the divisibility of the following numbers by 2, 5 and 10.

Solution (a) 350 → 350 ends with 0 so, it is exactly divisible by 2, 5 and 10.

(g) 419007 → 419007 ends with 7, so it is not exactly divisible by any of 2, 5 and 10

[NOTE :- Rest of the parts do your self]

Q=2 Test the divisibility of the following numbers by 3 & 9.

Solution (a) 123 → (1+2+3=6) since 6 is exactly divisible by 3 but not by 9, so 123 is exactly divisible by 3 but not by 9.

(g) 102345 → (1+0+2+3+4+5=15) since 15 is exactly divisible by 3 but not by 9, so it is exactly divisible by 3 but not by 9.

[NOTE :- Rest of the parts do your self]

Q=3 Test the divisibility of the following numbers by 4 & 8.

Solution (a) 2356 → 56 is exactly divisible by 4 but 356 is not exactly divisible by 8. So, 2356 is exactly divisible by 4 but not by 8.

(h) 626600 → 00 is exactly divisible by 4 and 600 is exactly divisible by 8. So 626600 is exactly divisible by 4 & 8.

Q=4 Test the divisibility of the following numbers by 11.

Solution (a) 2596 → 2+9 = 11 , 5+6 = 11 → [11-11=0]

So, 2596 is exactly divisible by 11.

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(c) 225027 → 2+5+2=9, 2+0+7=9 → [9-9=0]

So, 225027 is exactly divisible by 11.

Q=5 Replace — by the smallest digit so that

(a) 934—7 is divisible by 3

Solution 9+3+4+7=23, so that the smallest digit required is 1. [23+1=24]

(c) 28—36 is divisible by 8

sol: 136 is exactly divisible by 8, so the smallest digit required is 1.

Q=6 Give a number which is exactly divisible by:

Solution (a) 2 but not by 4 is 6 (c) 4 but not by 8 is 12.

Q=7 Give (a) Two numbers each of which is exactly divisible by 2 but not by 4 ~~is~~ (2,6)

(c) Two numbers each of which is exactly divisible by 2 and 8 but not by 16 → (8,24)

[NOTE:- Rest of the parts do your self]

Exercise 3.5

Q=1 Find the common factors of:

(a) 25 and 40

Solution The factors of 25 are (1), (5), 25

The factors of 40 are (1), 2, 4, (5), 8, 10, 20, 40

The common factors are 1 and 5.

Q=2 Find the first three common multiples of:

(a) 16 and 24

Solution The multiples of 16 are 16, 32, (48), 64, 80, (96), 112, 128, (144), ...

The multiples of 24 are 24, (48), 72, (96), 120, (144), ...

So, the first three common multiples are 48, 96 and 144

Q=3 Show that the following pairs are of Co-Primes:

(a) 59 and 97

Solution The factors of 59 are 1 and 59

The factors of 97 are 1 and 97

The common factor is 1

∴ It is a pair of Co-Prime

[NOTE:- Rest of the parts do your self]

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Q=4 Do your self

Q=5 Do your self

Q=6 Do your self

Q=7 Do your self

Q=8 Consider two numbers which are exactly divisible by 11. Show that their sum and difference are also exactly divisible by 11.

Solution- Let the numbers be 44 and 66, which are exactly divisible by 11.

Sum of numbers = 44 + 66 = 110

110 is exactly divisible by 11

Difference of numbers = 66 - 44 = 22

22 is exactly divisible by 11

Q=9 Find a pair of two numbers each of which divides 48 exactly, but their product does not divide 48.

Solution- 6 and 12.

Q=10 Find four pairs of Co-Prime numbers.

Solution- Co-Prime numbers (2,3), (3,5), (5,7) and (7,9)

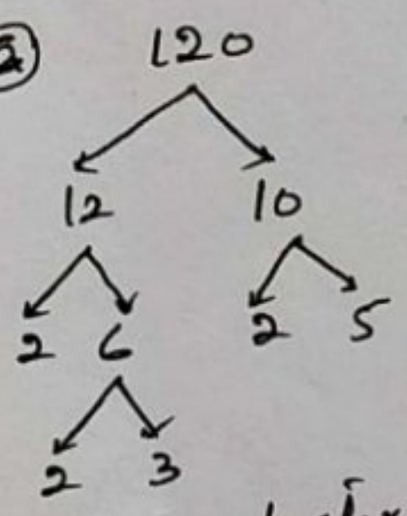
Q=11 Do your self

Q=12 Do your self

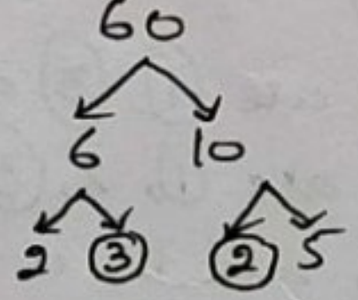
Exercise 3.6

Q=1 Here are four different factor trees. Two for 60 and two for 120. Write the missing numbers.

Sol: (a) 120



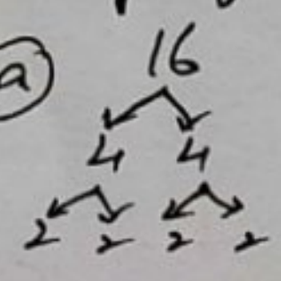
(a) 60



[NOTE:- Rest of parts do your self]

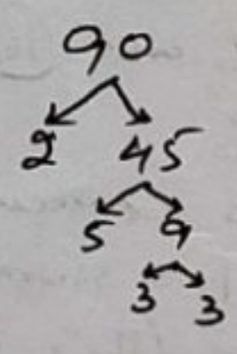
Q22 Using factor tree method, write Prime factorisation of:

Sol: (a) 16



Thus $16 = 2 \times 2 \times 2 \times 2$

(c) 90



Thus $90 = 2 \times 3 \times 3 \times 5$

P.T.O

Q=3 Using division Method. Write the Prime factorisation of:

(a)
2	64
2	32
2	16
2	8
2	4
	2

Thus $64 = 2\times2\times2\times2\times2\times2$

(c)
2	228
2	114
3	57
	19

Thus $228 = 2\times2\times3\times19$

Q24 Write the greatest 4-digit number formed of the digit 2, 0, 7 and 6. Also write its Prime factorisation.

Solution- The greatest 4-digit number formed of the digit 2, 0, 7 and 6 is 7620

2	7620
2	3810
3	1905
5	635
	127

Thus $7620 = 2\times2\times3\times5\times127$

Q25 Do your self.

Q26 In which of the following expressions, Prime factorisation has been done?

(a) $24 = 2\times3\times4$ [4 is not Prime]

(e) $56 = 2\times2\times2\times7$ All factors are Prime so factorisation has been done

[NOTE: Rest of the parts do your self]

~o~

Exercise 3.7

Q=1 Find the HCF of

(a) 9 and 12

Sol. The factors of 12 are 1, 3 and 9

The factors of 12 are 1, 2, 3, 4, 6 and 12

Thus HCF of 9 and 12 is 3

Q=2 Find the LCM of

(a) 8 and 16

Solution- The multiples of 8 are 8, 16, 24, 32, ------

The multiples of 16 are 16, 32, 48, ------

Thus LCM is 16

Q=3 Find the HCF of Two consecutive (a) numbers.

Solution- Consider Two consecutive numbers 10 and 11

Factors of 10 are 1, 2, 5 and 10

Factors of 11 are 1 and 11

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Thus The HCF of Two consecutive numbers is 1

[NOTE:- Rest of the Parts do your self]

Q=4 Find the HCF and LCM of the following pairs of numbers and verify the relationship.

(a) 12, 30

Solution 12 and 30

HCF of 12 and 30 is 6

LCM of 12 and 30 is 60

Product of $12 \times 30 = 360$

Product of LCM $\times$ HCF $= 60 \times 6$

$= 360$

Relationship verified

$12 \overline{)30} \; 2$; $\underline{24}$; $6 \overline{)12} \; 2$; $\underline{12}$; 0

HCF = 6

Rough

2 | 12,30

3 | 6,15

2,5

LCM = $2 \times 2 \times 3 \times 5$

LCM = 4×15

LCM = 60

[NOTE:- Rest of the parts do your self]

Q=5 Find the HCF and LCM of the following pairs of Co-Primes what do you observe in the result obtained.

(a) 2, 5

Sol: HCF of 2 & 5 = 1

LCM of 2 & 5 = 10

(b) 3 and 7

Sol HCF of 3 & 7 = 1

LCM of 3 & 7 = 21

(c) 4 and 5

Sol HCF of 4 & 5 = 1

LCM of 4 & 5 = 20

We observe that the HCF of the Co-Primes is always 1 and their LCM is always their Product.

Q=6 Find the HCF and LCM of the following pairs of numbers. What do you observe in the result obtained?

(a) 5, 20

Sol HCF of 5 & 20 = 5

LCM of 5 & 20 = 20

(b) 6, 18

Sol HCF of 6 & 18 = 6

LCM of 6 & 18 = 18

(c) 12, 48

Sol HCF of 12, 48 = 12

LCM of 12, 48 = 48

(d) 9, 45

Sol HCF of 9 & 45 = 9

LCM of 9 & 45 = 45

We observe that of Two numbers are multiples of each other the smaller number is HCF and the larger number is LCM.

Exercise 3.8

Q=1 Find the HCF and LCM of the following numbers. Also verify the relationship: HCF X LCM = Product of the numbers.

(a) 48, 72

Sol. $48 = 2 \times 2 \times 2 \times 2 \times 3$

$72 = 2 \times 2 \times 2 \times 3 \times 3$

So HCF $= 2 \times 2 \times 2 \times 3 = 24$

LCM $= 2 \times 2 \times 2 \times 3 \times 2 \times 3 = 144$

HCF X LCM $= 24 \times 144 = 3456$

Product of 48 & 72 $= 48 \times 72 = 3456$

Hence Relationship is verified

Rough:

LCM

2 | 48,72

2 | 24,36

2 | 12,18

3 | 6,9

2,3

$48 \overline{)72} \; 1$; $\underline{48}$; $24 \overline{)48} \; 2$; $\underline{48}$; 0

HCF = 24

Product

48×72

96

336 x

3456

P.T.O

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Q=2 Given that HCF of two numbers is 12 and the Product of the nos is 288. Determine their LCM.

Solution HCF of Two numbers = 12

Product of the nos = 288

$$LCM = \frac{\text{Product of Two nos}}{HCF} = \frac{288}{12} = 24$$

$\therefore$ LCM = 24

Q=3 Do your self

Q=4 Do your self.

Q=5 Find the Smallest number which when divided by 35, 56 and 105 leaves remainder 5 in each case.

Solution We know that the Smallest no. exactly divisible by 35, 56 and 105 is their LCM. Therefore the required no. is 5 more than the LCM. Now we have.

$35 = 5 \times 7$

$56 = 2 \times 2 \times 2 \times 7$

$105 = 3 \times 5 \times 7$

$\therefore$ LCM $= 2 \times 2 \times 2 \times 3 \times 5 \times 7 = 840$

Hence the required Smallest number is $840 + 5 = 845$

Q=6 Do your self

Q=7 Find the Smallest 4-digit number which is exactly divisible by 18, 24 and 32.

Solution The required Smallest 4-digit number is a multiple of the LCM of 18, 24 and 32

$18 = 2 \times 3 \times 3$

$24 = 2 \times 3 \times 2 \times 2$

$32 = 2 \times 2 \times 2 \times 2 \times 2$

LCM $= 2 \times 3 \times 3 \times 2 \times 2 \times 2 \times 2 = 288$

The multiples of 288 are 288, 576, 864, 1152, ----

So, the Smallest 4-digit number is 1152

Q=8 Do your self.

Q=9 In the morning walk three persons step off together their steps measure 80cm, 85cm, and 90cm respectively. What is the minimum distance each should walk, so that all can cover the same distance in complete steps.

Solution The maximum distance each should walk is the LCM of 80cm, 85cm and 90cm

$80 = 2 \times 2 \times 2 \times 2 \times 5$

$85 = 5 \times 17$

$90 = 2 \times 5 \times 3 \times 3$

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LCM = 2×2×2×2×5×3×3×17
= 12240 cm

So, The required minimum distance = 12240 cm

Q=10 Four bells are arranged in such a manner that they ring once every 5, 8, 10 minutes respectively. After how many minutes of their ringing simultaneously will they ring again together?

Solution :- The required time will be the LCM of 5, 8 and 10.

5 = 5
8 = 2×2×2
10 = 2×5

LCM = 2×2×2×5 = 40 minutes

So, the bells will ring again simultaneously after 40 minutes.

[Sharpen your Understanding On Book
Page no. 67.]

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[NOTE :- Rest of the parts do your self.]

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P.T.O

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Chapter :- UNDERSTANDING ELEMENTARY SHAPES 5

CLASS :- 6th Math B UNIT 2nd

Exercise 5.1

Q=1 Compare the two line segments of each pair using a divider and indicate which one is longer.

(a) fig on book

Solution $\overline{XY}$ is longer than $\overline{PQ}$

(c) fig on book

Solution $\overline{AB}$ is longer than $\overline{EF}$

Q=2 Using a ruler, determine the length of each of the following line segments.

(a) fig on book

Sol. AB = 2.6 cm

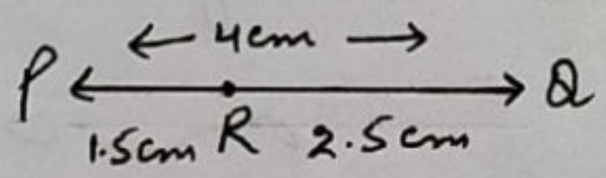
(c) fig on book

Solution EF = 2.6 cm

Q=3 Draw a line segment PQ. Take any point R and on this line segment such that R lies between P and Q. Measure the length of PR, RQ and PQ; and verify that PQ = PR + RQ.

Solution

(figure)



Length of PQ = 4cm

Length of PR = 1.5cm

Length of RQ = 2.5cm

Sum of PR and RQ = 1.5cm + 2.5cm

PR + RQ = 4cm

So PQ = PR + RQ

Q=4 Measure the line segments, using a ruler and find the longest and the shortest line segments.

Solution Measuring work to be done by student

(a) fig on book
Longest line segment $BC = 3.3cm$
Smallest line segment $AD = 1.2cm$

(b) fig on book
Longest line segment $PR = 2.8cm$
Smallest line segment $QS = 1cm$

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Exercise 5.2

Q=1 Identify the geometrical shapes having only right angles:

(a) fig. on book (b) fig. on book (c) fig. on book
(d) fig. on book (e) fig. on book (f) fig. on book (g) fig. on book

Solution (c) and (f)

Q=2 Classify each of the following angles as Right angle, straight angle, obtuse angle, acute angle or reflex angle:

(a) fig on book (b) fig on book (c) fig on book
(d) fig on book (e) fig on book (f) fig on book
(g) fig on book (h) fig on book (i) fig on book

Solution
Acute angle → (c), (e), (f), (g)
Right angle → (b), (h), (i)
Reflex angle → (a)
Straight angle → (d)

Q=3 Look around you and identify edges meeting at corners to produce acute, obtuse, right, reflex or straight angle. List two examples of each type.

Solution To be done by Student P.T.O

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Exercise 5.3

Q=1 Which angle has a greater measure? First estimate and then verify by measuring them with a protractor.

(a) fig on book (b) fig on book

(c) fig on book (d) fig on book

Solution (a) $\angle MNP$ is greater than $\angle ABC$

$\angle ABC = 30^\circ$, $\angle MNP = 70^\circ$

(b) $\angle XYZ$ is greater than $\angle CBA$

$\angle CBA = 90^\circ$, $\angle XYZ = 105^\circ$

(c) $\angle PQR$ is greater than $\angle PMN$

$\angle PQR = 56^\circ$, $\angle PMN = 40^\circ$

(d) $\angle POR$ is greater than $\angle ROS$

$\angle ROS = 60^\circ$, $\angle POR = 115^\circ$

Q=2 Measure the following angles, with a Protractor and write down their measures:

(a) fig. on book (b) fig. on book (c) fig. on book

(d) fig. on book (e) fig. on book (f) fig. on book

Solution (a) 40° (b) 115° (c) 95° (d) 120°

(e) 75° (f) 35°

Q=3 Classify the angles as acute, obtuse and reflex angles whose measures are given below:

(a) 75° (b) 37° (c) 103° (d) 95° (e) 27°

(f) 10° (g) 190° (h) 230° (i) 110° (j) 175°

Solution Acute angles → (a), (b), (e) and (f)

obtuse angles → (c), (d), (i) and (j)

Reflex angles → (g) and (h)

Q=4 Measure and classify each angle:
fig on book.

Solution

Angle	Measure	Type
∠AOB	60°	acute angle
∠BOC	50°	acute angle
∠AOD	120°	obtuse angle
∠COD	130°	obtuse angle
∠AOC	110°	Obtuse angle
∠BOD	180°	Straight angle

Q=5 In the given figure, measure ∠AOB and ∠BOC.
Also verify that ∠AOC = ∠AOB + ∠BOC

(a) fig on book

Solution- ∠AOB = 45°
∠BOC = 135°
∠AOC = 180°
∠AOB + ∠BOC = 180°
45° + 135° = 180°
So, ∠AOC = ∠AOB + ∠BOC

(b) fig on book

Solution- ∠AOB = 45°
∠BOC = 15°
∠AOC = 60°
∠AOB + ∠BOC = 60°
45° + 15° = 60°
So, ∠AOC = ∠AOB + ∠BOC

Q=6 In the given figure, the angle AOB is of measure 40°. Look at the same figure through a magnifying glass. Does the measure of the angle become greater or smaller?
fig on book.

Solution No

Q=7 Say 'True' or 'False' for the following statements:

Solution (a) True (b) False (c) False (d) True

P.T.O

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Q=8 Fill in the blanks

Solution (a) degree (b) angle (c) obtuse angle
(d) Right angle (e) Straight angle

Q=9 $\angle AOB$ and $\angle PQR$ are complementary to each other. Find the measure of $\angle AOB$, if the measure of $\angle PQR$ is:

(a) 35°

Solution $\angle AOB + \angle PQR = 90^\circ$ (complementary angles)

So, $\angle AOB + 35^\circ = 90^\circ$

$\angle AOB = 90^\circ - 35^\circ$

$\angle AOB = 55^\circ$

(c) 75°

Solution $\angle AOB + \angle PQR = 90^\circ$ (complementary angles)

So, $\angle AOB + 75^\circ = 90^\circ$

$\angle AOB = 90^\circ - 75^\circ$

$\angle AOB = 15^\circ$

Q=10 $\angle AOB$ and $\angle XYZ$ are supplementary to each other. Find the measure of $\angle XYZ$, if the measure of $\angle AOB$ is:

(a) 110°

Solution $\angle AOB + \angle XYZ = 180^\circ$ (supplementary angles)

So, $110^\circ + \angle XYZ = 180^\circ$

$\angle XYZ = 180^\circ - 110^\circ$

$\angle XYZ = 70^\circ$

(c) 90°

Solution $\angle AOB + \angle XYZ = 180^\circ$ (supplementary angles)

So, $90^\circ + \angle XYZ = 180^\circ$

$\angle XYZ = 180^\circ - 90^\circ$

$\angle XYZ = 90^\circ$

[NOTE :- Rest of the parts do your self]

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Q=11 In which of the following two lines are perpendicular lines?

(a) fig on book (b) fig on book (c) fig on book

Solution In figure (b) lines are perpendicular

Q=12 In which of the following, the line l is the perpendicular bisector of line segment PQ?

(a) fig. on book (b) fig. on book (c) fig. on book

(d) fig. on book (e) fig. on book

Solution In figure (b), line l is the perpendicular bisector of the line segment PQ.

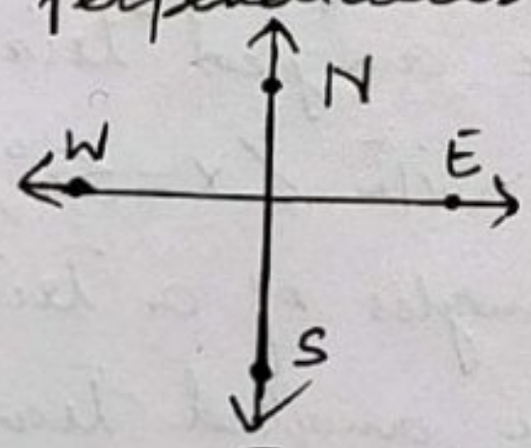
Q=13 Which of the two directions are perpendicular to each other?

(a) East and South (b) East and west

(c) South and west (d) North and East

Solution (a), (c) and (d) are perpendicular to each other.

(fig)→



Q=14 In which of the following letters, you find perpendicular lines?

A E F H I L M N

T V W X Y Z

Solution E, F, H, I, L and T has perpendicular lines.

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P.T.O

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Exercise 5.4

Q=1 Name the types of the following Triangles:

(a) ΔABC with $\overline{AB} = 7cm$, $\overline{BC} = 6cm$ and $\overline{CA} = 6cm$

Solution Two sides are equal so, it is an Isosceles triangle.

(b) ΔPQR with $\overline{PQ} = \overline{QR} = \overline{RP} = 4cm$

Solution All sides are equal, so it is an equilateral triangle.

(c) ΔDEF with $\overline{DE} = 3cm$, $\overline{EF} = 4cm$ and $\overline{FD} = 5cm$

Solution All sides are unequal, so it is a scalene triangle.

Q=2 Name the types of the following Triangles:

(a) ΔABC, with $\angle A = 90^\circ$

Solution One angle of a triangle is 90° so, it is a right angled Triangle.

(b) ΔPQR with $\angle Q = 110^\circ$

Solution. One angle of a Triangle is obtuse so, it is an obtuse angled triangle.

(c) ΔXYZ, with $\angle X = 50^\circ$, $\angle Y = 70^\circ$ and $\angle Z = 60^\circ$

Solution All angles of a Triangle are acute so, it is an acute angled Triangle.

(d) ΔMNP with $\angle X = \angle Y = 70^\circ$ and $\angle Z = 40^\circ$

Solution Same as part (c)

Q=3 Is it possible to have a Triangle, in which

(a) Two of the angles are acute? Yes

(b) Two of the angles are right angles? NO

(c) Two of the angles are obtuse angles? No

(d) each angle is equal to 60°? Yes

(e) each angle is less than 60°? No

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(f) each angle is greater than 45°? Yes

(g) each angle is greater than 60°? No

(h) each angle is acute? Yes

Q=4 Can the following be the measures of the angles of a triangle?

(a) 40°, 80°, 60°

Solution Possible because sum of angles is equal to 180°

[40° + 80° + 60° = 180°]

(b) 70°, 80°, 60°

Solution Not Possible because sum of angles cannot be more than 180°. [70° + 80° + 60° = 210°]

Q=5 Can the following be the lengths of the sides of a triangle?

(a) 7cm, 6cm, 5cm

Solution Possible because the sum of lengths of any two sides is greater than the third side. [7cm + 6cm > 5cm]

(b) 4cm, 4cm, 9cm

Solution Not Possible because the sum of lengths of two sides cannot be less than third side [4cm + 4cm < 9cm]

(c) 2.5cm, 5.5cm, 8cm

Solution Not Possible because sum of two sides can never be equal to the third side. [2.5cm + 5.5cm = 8cm]

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Exercise 5.5

Q=1 Say 'True' or 'False' for the following statements:

Solution (a) T (b) F (c) T (d) T (e) F (f) T

(Statements on Book)

P.T.O

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Q=2 Write reasons for the following:

(a) A square can be considered as a special rectangle.

Sol. opposite sides are equal and each angle is a right angle.

(b) A square can be considered as a special rhombus.

Sol. All the four sides are equal and diagonals bisect each other at right angles.

(c) A rectangle can be considered as a special parallelogram.

Solution- opposite sides are parallel.

(d) A square is also a parallelogram.

Solution- opposite sides are parallel.

Q=3 State which of the following are correct

(a) A trapezium is a rectangle (b) A parallelogram is a trapezium (c) A rhombus is a parallelogram (d) A square is a rhombus (e) All rectangles are squares.

Solution- (c) and (d) are correct.

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Exercise 5.6

Q=1 Fill in the blanks:

Sol:

3-dimensional shape	Number of faces	Number of edges	Number of vertices.
Cube	6	12	8
Cuboid	6	12	8
Sphere	1	0	0
cylinder	3	2	0
cone	2	1	1

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Q=2 Match the following

Solution:- (a) → (iv) , (b) → (v), (c) → (i)
(d) → (vi) , (e) → (iii), (f) → (ii)

Q=3 Find the number of curved and plane faces of the following :

(a) Cylinder : (b) Cone (c) Sphere

Solution (a) Cylinder : One curved and two plane faces.

(b) Cone: One curved and one plane face.

(c) Sphere: One curved face.

Q=4 How many faces, edges and vertices does a tetrahedron have ?.

Solution Tetrahedron have four faces, six edges and four vertices.

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[NOTE :- [Sharpen your Understanding On Book]
Page No. 104]

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