Class : 7

Sub : Mathematics

Date

Page 1

Staller

II ND TERM SYLLABUS.

3. Decimals. → 10 marks.

5. Powers and Exponents. → 10 marks.

6. Algebriac Expressions → 14 marks.

9. Percentage and its Applications. → 12 marks

12. Symmetry. → 6 marks.

14. Constructions → 8 marks.

5. Powers and Exponents.

Date
Page 2 Staller

Exercise 5.1

1.

a) 3^2.

b) 51^3.

c) 5^8.

d) $2^3 \times 3^2$.

e) 13^9

f) 4^{45}.

2.

a).

Soln $3^4 = 3 \times 3 \times 3 \times 3$

$= 81$

$$\begin{array}{r} 2 \\ 27 \\ \times 3 \\ \hline 81 \end{array}$$

c)

Soln $(-3)^3 = -3 \times -3 \times -3$

$= -27.$

g)

Soln $(-4)^4 = -4 \times -4 \times -4 \times -4.$

$= 256.$

$$\begin{array}{r} (3) \\ 16 \\ \times 16 \\ \hline 096 \\ 16 \\ \hline 256 \end{array}$$

3.

a)

Sol^n Base = 3.
Exponent = 4.
Expanded form = $3 \times 3 \times 3 \times 3$.
Value = 81.

② 27 × 3 = 81

c)

Sol^n Base = 2.
Exponent = 6.
Expanded form = $2 \times 2 \times 2 \times 2 \times 2 \times 2$.
Value = 64.

② 16 × 4 = 64

4.

a)

Sol^n $\left(\frac{3}{4}\right)^3 = \frac{3}{4} \times \frac{3}{4} \times \frac{3}{4}$.

$= \frac{27}{64}$.

② 16 × 4 = 64

c)

Sol^n $\left(-\frac{5}{8}\right)^4 = \frac{-5}{8} \times \frac{-5}{8} \times \frac{-5}{8} \times \frac{-5}{8}$.

$= \frac{625}{4096}$.

② 25 × 25 = 125 + 50 = 625

① 64 × 64 = ①256 384 = 4096 ②

e)

Soln $\left(-\frac{7}{10}\right)^3 = -\frac{7}{10} \times -\frac{7}{10} \times -\frac{7}{10}$.

$= -\frac{343}{1000}$.

⑥
49
×7
343

5.

a)

Soln $\frac{1}{27} = \frac{1 \times 1 \times 1}{3 \times 3 \times 3}$.

$= \left(\frac{1}{3}\right)^3$

3	27
3	9
	3.

c)

Soln $\frac{-27}{125} = \frac{-3 \times -3 \times -3}{5 \times 5 \times 5}$.

$= \left(-\frac{3}{5}\right)^3$.

5	125.
5	25.
	5.

e)

Soln $\frac{-1}{343} = \frac{-1 \times -1 \times -1}{7 \times 7 \times 7}$.

$= \left(\frac{-1}{7}\right)^3$.

7	343
7	49
	7

f)

Sol^n: $\frac{49}{81} = \frac{7 \times 7}{9 \times 9}$

$= \left(\frac{7}{9}\right)^2$

g)

Sol^n: $\frac{1}{1000} = \frac{1 \times 1 \times 1}{10 \times 10 \times 10}$

$= \left(\frac{1}{10}\right)^3$

k)

Sol^n: $441 = 3 \times 3 \times 7 \times 7$

$= 3^2 \times 7^2$

$= (3 \times 7)^2$

$= (21)^2$

3	441
3	147
7	49
	7

Exercise 5.2.

1.

a)

Sol^n $(2)^{3+5}$.

$= 2^8$.

c)

Sol^n $(a)^{3+4}$.

$= a^7$

e)

Sol^n $\left(\frac{-2}{3}\right)^{2+3}$.

$= \left(-\frac{2}{3}\right)^5$.

g)

Sol^n $(a)^{3+1+4}$.

$= a^8$.

h)

Sol^n $(a)^{m+3}$.

j)

Sol^n $(-3)^{5-2}$

$= (-3)^3$.

2.

a)

Sol^n: $2^{3\times 2}$

$= 2^6$.

c)

Sol^n: $5^{3\times 3}$

$= 5^9$.

3.

a).

Sol^n: $x^{a\times b}$.

$= x^{ab}$.

d).

Sol^n: $a^{3\times 4}$.

$= a^{12}$.

f).

Sol^n: $b^{x\times y}$.

$= b^{xy}$

h).

Sol^n: $3^{x\times y}$.

$= 3^{xy}$.

4.

a)

Sol^n: 12^3.

c)

Sol^n: 14^3.

e)

Sol^n: $(ab)^3$.

g)

Sol^n: $(ab)^p$.

5.

a)

Sol^n: $(a \times b)^3$.

$= (ab)^3$.

b).

Sol^n: $(4 \times 3)^x$.

$= (12)^x$.

d)

Sol^n: $(8)^{9+10}$.

$= 8^{19}$

e)

Sol^n: $(x \times y)^a$

$= (xy)^a$.

f)

Sol^n: $(3 \times a)^4$.

$= (3a)^4$.

6.

a).

Soln: 1.

b)

Soln: $(a)^{x-x}$

$= (a)^{0}$.

$= 1$

d).

Soln: $1 \times 5 \times 5$.

1×25.

$= 25$.

e)

Soln: $1 \times b^{3}$.

$= b^{3}$.

h)

Soln: 1×1

$= 1$.

i).

Soln: $1 \div 1$

$= 1$.

7.

a).

Sol^n: $\frac{(2^4)^2 \times 7^3}{8^2 \times 7} = \frac{(2)^{4\times2} \times 7^3}{8^2 \times 7}$.

$= \frac{(2)^8 \times 7^3}{8^2 \times 7}$.

$= \frac{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 7 \times 7 \times 7}{8 \times 8 \times 7}$

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

$= 196$.

⑤
28
×7
196

c)

Sol^n: $(3^0 - 2^0) \times 6^0 = (1-1) \times 1$

$= 0 \times 1$

$= 0$.

e).

Sol^n: $[(5^2)^3 \times 5^4] \div 5^5 = [(5)^{2\times3} \times 5^4] \div 5^5$.

$= [5^6 \times 5^4] \div 5^5$.

$= [5^{6+4}] \div 5^5$.

$= 5^{10} \div 5^5$.

$= 5^{10-5}$.

$= 5^5$.

$= 5 \times 5 \times 5 \times 5 \times 5$.

$= 3125$.

$$\begin{array}{r} {\scriptstyle (1)}\,{\scriptstyle (2)} \\ 125 \\ \times 25 \\ \hline {\scriptstyle (1)}\,625 \\ +250 \\ \hline 3125 \end{array}$$

8.

a).

Sol^n: $(2)^{2x} = 64$.

$\Rightarrow (2)^{2x} = (2)^6$.

$\Rightarrow 2x = 6$.

$\Rightarrow x = \frac{6^3}{2_1}$

$= 3$

2	64
2	32
2	16
2	8
2	4
	2

b).

Sol^n: $\frac{5^{3x} \times 5^2}{5^x} = 5^3 \times 5^3$.

$\Rightarrow \frac{(5)^{3x+2}}{5^x} = (5)^{3+3}$.

$\Rightarrow (5)^{3x+2-x} = (5)^6$.

$\Rightarrow (5)^{2x+2} = (5)^6$.

$\Rightarrow 2x + 2 = 6.$

$\Rightarrow 2x = 6 - 2$

$\Rightarrow 2x = 4.$

$\Rightarrow x = \frac{4}{2}^{2}$

$= 2.$

6. Algebriac Expressions

Exercise 6.2

1.

a)

Sol^n: Terms with variables : $9x^2y^3$, $-2xy^2$.

Terms which are only constants : 45.

d)

Sol^n: Terms with variables : $80a^2b^3c$, $3xy$.

Terms which are only constants : -9.

2.

a)

Sol^n: $5a = 5 \times 1 \times a$

c)

Sol^n: $x^3 = x \times x \times x$.

e)

Sol^n: $ab + cd = a \times b + c \times d$.

f)

Sol^n: $4a^2b - 7 = 4 \times 1 \times a \times a \times b - 7 \times 1$

h).

Sol: $2xy - 4x^2xy = 2\times1\times x\times y - 2\times2\times x\times x\times y.$

i)

Sol: $ax + by - 72 = a\times x\times b\times y\times 2\times2\times2\times3\times3.$

2	72.
2	36.
2	18
3	9.
	3.

3.

a). Monomial.

b). Two, Binomial.

c) Trinomial.

d) Polynomial

e) algebriac expressions.

4.

a). Monomial

b) Monomial

c) Binomial

d) Trinomial

e) Trinomial

f) Binomial

g) Binomial

h) Trinomial.

Exercise 6.3.

1.

a) Like Terms.

b) Unlike Terms.

c) Like Terms.

d) Like Terms.

e) Like Terms.

f) Unlike Terms.

g) Like Terms.

2.

a)

Sol^n Like Terms : a^2x, $4a^2x$.

b)

Sol^n Like Terms : $3b$, $7b$.

c)

Sol^n Like Terms : $2x$, $3x$.

d)

Sol^n Like Terms : xy, $3yx$.

3.

a).

Soln $8x$.

c).

Soln $9m$.

d).

Soln $4y$.

g).

Soln $10x$.

4.

a).

Soln $(8a + 3a) + 2b$.

$= 11a + 2b$.

c)

Soln $(5x + 2x) + 3y$.

$= 7x + 3y$.

d).

Soln $(8p + 2p) - 3q$.

$= 10p - 3q$.

e).

Soln $8h - 5l - 3m$.

b)

Soln $8h + (10l - 7l) + 2k$.

$= 8h + 3l + 2k$.

6.

a)

Soln $4a^2 + (-5a^2) + (-3a^2) + 7a^2$.

$= 4a^2 - 5a^2 - 3a^2 + 7a^2$.

$= 4a^2 + 7a^2 - 5a^2 - 3a^2$

$= 11a^2 - 8a^2$

$= 3a^2$.

c)

Soln $6x^2y + (-8x^2y) + (-4x^2y) + 3x^2y$.

$= 6x^2y - 8x^2y - 4x^2y + 3x^2y$.

$= 6x^2y + 3x^2y - 8x^2y - 4x^2y$.

$= 9x^2y - 12x^2y$.

$= -3x^2y$.

d).

Sol:n $a + b + 2a - b + 3a - b.$

$= a + 2a + 3a + \cancel{b} - \cancel{b} - b.$

$= 6a - b.$

e).

Sol:n $3x^2 + 4x + 5x^2 - 3x + 2x - 4x^2.$

$= 3x^2 + 5x^2 - 4x^2 + 4x - 3x + 2x.$

$= 8x^2 - 4x^2 + 6x - 3x.$

$= 4x^2 + 3x.$

7.

a).
$$\begin{array}{r} 3x + 2y. \\ (+)\ 6x + 9y. \\ \hline 9x + 11y \end{array}$$

c)
$$\begin{array}{r} -8a - 7b. \\ (+)\ 10a + 6b. \\ \hline 2a - b. \end{array}$$

d).
$$\begin{array}{r} -3n + 12m. \\ (+)\ 8n - 17m. \\ \hline 5n - 5m \end{array}$$

8.

a)

Soln: $3a + b. + 5a + 2b + 3a - b.$

$= 3a + 5a + 3a + b + 2b - b.$

$= 11a + 2b.$

c).

Soln: $5x^2 + 7x + 3 + 12x^2 - 3x + 8 + 6x^2 - 4x + 9.$

$= 5x^2 + 12x^2 + 6x^2 + 7x - 3x - 4x + 3 + 8 + 9.$

$= 23x^2 + 7x - 7x + 20$

$= 23x^2 + 20.$

e)

Soln: $4x + 5y + 7 + (-5x - y - 3) + 3x - 3y + 2.$

$= 4x + 5y + 7 - 5x - y - 3 + 3x - 3y + 2.$

$= 4x - 5x + 3x + 5y - y - 3y + 7 - 3 + 2.$

$= 2x + y + 6.$

9.

a).

Sol: $4x$.

Coefficient $= 4$.

b).

Sol: $-88x$.

Coefficient $= -88$.

10.

a).

Sol: Coefficient of $-Pq = -1$

Coefficient of $7p^2q^2 = 7$.

Exercise 6.4.

1.

a)

Sol^n $4x - 7x$

$= -3x$

c)

Sol^n $-9b - (-8b)$.

$= -9b + 8b$.

$= -b$.

d)

Sol^n $3x - (-7x)$.

$= 3x + 7x$

$= 10x$.

h)

Sol^n $-5axy - 20axy$.

$= -25axy$.

2.

a)

Sol^n $(3a^2 + 6b) - (3a^2 + 6b)$

$= 3a^2 + 6b - 3a^2 - 6b$.

$= 0$.

B)

Sol:- $(5m^2 - 9) - (-3m^2 + 6m + 3)$.

$= 5m^2 - 9 + 3m^2 - 6m - 3$.

$= 5m^2 + 3m^2 - 6m - 9 - 3$.

$= 8m^2 - 6m - 6$.

d)

Sol:- $(6a^2 - 5b + 9c) - (-7a^2 + 6b - 10c)$.

$= 6a^2 - 5b + 9c + 7a^2 - 6b + 10c$.

$= 6a^2 + 7a^2 - 5b - 6b + 9c + 10c$.

$= 13a^2 - 11b + 19c$.

f)

Sol:- $(18xy + 4yz) - (4xy - 5yz - 3xz)$.

$= 18xy + 4yz - 4xy + 5yz + 3xz$.

$= 18xy - 4xy + 4yz + 5yz + 3xz$.

$= 14xy + 9yz + 3xz$.

j) $-5a^2b + 3ab^2 + 11$

$-7a^2b + 8ab^2 - 18$

(+) (−) (+)

$2a^2b - 5ab^2 + 29$

* All the signs of the second expression will change.

ie:, $(-5a^2b + 3ab^2 + 11) - (-7a^2b + 8ab^2 - 18)$.

$= -5a^2b + 3ab^2 + 11 + 7a^2b - 8ab^2 + 18$.

l) $9y^2 + 5y - 4$.

$4y^2 - 5y + 8$.

(−) (+) (−)

$5y^2 + 10y - 12$

3.

a) $5 - \{3 - (x - 8)\}$.

Sol:ⁿ $5 - \{3 - x + 8\}$.

$= 5 - \{11 - x\}$.

$= 5 - 11 + x$.

$= -6 + x$.

$= x - 6$.

c) $15 - [3 + \{5 - (x - 7)\}]$.

Sol:- $15 - [3 + \{5 - x + 7\}]$.

$= 15 - [3 + 12 - x]$.

$\Rightarrow 15 - 15 + x$.

$= x$

d). $3a - [a + b - \{a + b + c - (a + b + c + d)\}]$.

Sol:- $3a - [a + b - \{a + b + c - a - b - c - d\}]$.

$= 3a - [a + b + d]$.

$= 3a - a - b - d$.

$= 2a - b - d$.

e). $xy + (xy - 4x^3 + 3x - 5) - (-3x^2 - 4) - (xy + x^3 - 4)$.

Sol:- $xy + xy - 4x^3 + 3x - 5 + 3x^2 + 4 - xy - x^3 + 4$.

$= xy - 4x^3 - x^3 + 3x + 3x^2 - 5 + 4 + 4$.

$= xy - 5x^3 + 3x + 3x^2 + 3$.

$= -5x^3 + 3x^2 + 3x + xy + 3$.

4.

Sol^n Length of 1st rope $= (2x + 3)$ m.
Length of 2nd rope $= (3x - 7)$ m.

$\therefore$ Total length of two ropes together
$= (2x + 3) + (3x - 7)$.
$= 2x + 3 + 3x - 7$.
$= 2x + 3x + 3 - 7$
$= 5x - 4$ metres.

5.

Sol^n $\therefore$ The required expression $= (3x^2 + 5xy) - (2x^2 + xy + 2y^2)$

$= 3x^2 + 5xy - 2x^2 - xy - 2y^2$

$= 3x^2 - 2x^2 + 5xy - xy - 2y^2$

$= x^2 + 4xy - 2y^2$

$= x^2 - 2y^2 + 4xy$.

7.

Sol^{n} First,

Sum of $(5x - 2y + 11)$ and $(-y - 11)$.

$= (5x - 2y + 11) + (-y - 11)$.

$= 5x - 2y + 11 - y - 11$.

$= 5x - 3y$.

Now, $(5x - 3y) - (5x - 2y - 11)$.

$= 5x - 3y - 5x + 2y + 11$.

$= -y + 11$.

9.

Sol^{n} Perimeter of the Triangle $= (2x^2 + 3x + 1) + (x^2 + 7) + (3x^2 - 2x + 3)$

$= 2x^2 + 3x + 1 + x^2 + 7 + 3x^2 - 2x + 3$

$= 2x^2 + x^2 + 3x^2 + 3x - 2x + 1 + 7 + 3$

$= 6x^2 + x + 11$.

11.

Sol:ⁿ Distance travelled by bus $= p^2 + 3p + 5$.

Distance travelled by train $= 2p^2 - 5p - 7$.

∴ Total distance travelled by Sonu

$= (p^2 + 3p + 5) + (2p^2 - 5p - 7)$.

$= p^2 + 3p + 5 + 2p^2 - 5p - 7$.

$= p^2 + 2p^2 + 3p - 5p + 5 - 7$

$= 3p^2 - 2p - 2$.

12.

Sol:ⁿ length $= 3x + y$.
breadth $= 7x + 2y$.

∴ Perimeter of the rectangle $= 2 \times (l + b)$

$= 2 \times [(3x + y) + (7x + 2y)]$

$= 2 \times [3x + y + 7x + 2y]$.

$= 2 \times [3x + 7x + y + 2y]$.

$= 2 \times [10x + 3y]$

$= 20x + 6y$.

13.

Sol:- Side of the square = $8x + 3$.

∴ Perimeter of the square = 4 × side.

$= 4 \times (8x + 3)$

$= 32x + 12$.

15.

Sol:- Original length of the wire = $(7x - 3)$ m

Length of wire cut out = $(3x + 4)$ m

∴ Remaining wire left = $(7x - 3) - (3x + 4)$

$= 7x - 3 - 3x - 4$.

$= 7x - 3x - 3 - 4$.

$= (4x - 7)$ m.

Exercise 6.5.

1.	POLYNOMIAL	DEGREE
a.	$-3x^2 + 5x^4 + 2x + 5$.	4.
b.	$5x^6 - y^3 + 5xy^7$	7.
c.	$4x^2yz^3 - 4x^3y^2 - 2x^3$	3.
d.	$4x + 3y + z$	1
e.	7	0.

2.

a).

Sol:n $4x^4 - 3x^3 + 4x^2 + 1$

b).

Sol:n $-3a^6 + 4a^5 + 5a^3 - 1$

c).

Sol:n $-5x^6y - 3x^3y^3 - 2x^2y^2 + 7xy^3 + 7xy^2$.

3.

a) $x + 6$. if $x = 24$.

Sol^n Putting $x = 24$, we have.

$$x + 6.$$
$$= 24 + 6.$$
$$= 30.$$

d) $20 - (m + n)$ when $m = 6$ & $n = 3$.

Sol^n Putting $m = 6$ and $n = 3$, we have

$$20 - (m + n)$$
$$= 20 - (6 + 3).$$
$$= 20 - 9$$
$$= 11.$$

e) $(p + q) - (p - q)$ when $p = 8$ & $q = 4$.

Sol^n Putting $p = 8$ & $q = 4$., we have

$$(p + q) - (p - q).$$
$$= (8 + 4) - (8 - 4)$$
$$= 12 - 4.$$
$$= 8.$$

4.

a).

Soln $C = n \times p$.

b).

Soln $S = C + P$.

c)

Soln $A + B + C = 180^\circ$

d)

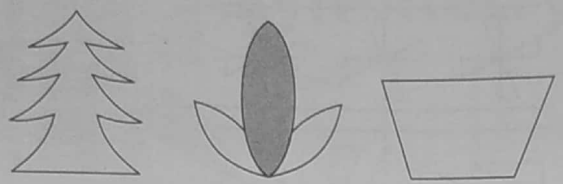
Soln Area of the square $= a^2$

e).

Soln $a = l \times b$.

Try This

Draw lines of symmetry for the shapes in Figure 12.3.



(a) (b) (c)

Fig. 12.3

In some cases, we get more than one line of symmetry. For example, a rectangle has two lines of symmetry (Fig. 12.4). A rectangle is a polygon but not a regular polygon. Recall that a regular polygon is a polygon all of whose sides and angles are of equal measure like a square, a pentagon, etc. In all regular polygons, number of lines of symmetry is always equal to the number of its sides. A square has four lines of symmetry (Fig. 12.5).

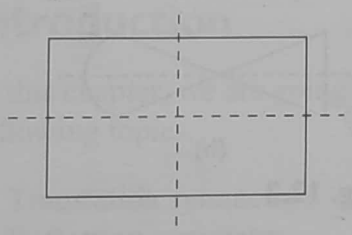


Fig. 12.4

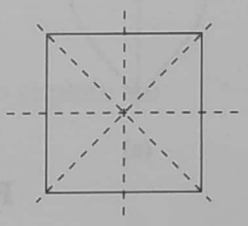


Fig. 12.5

Similarly, a pentagon has five lines of symmetry (Fig. 12.6).

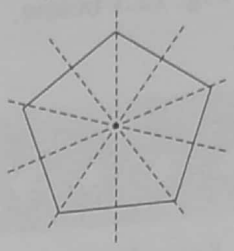


Fig. 12.6

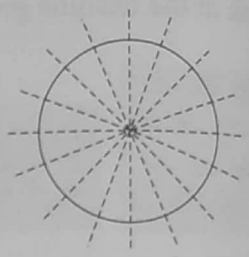


Fig. 12.7

A circle, as can be seen in Figure 12.7, has infinite lines of symmetry.

There are some objects and figures that have no lines of symmetry. For example, the irregular shape shown in Figure 12.8 has no line of symmetry.

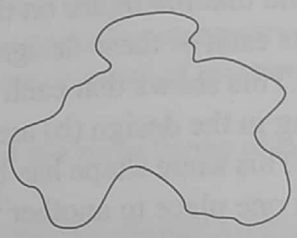


Fig. 12.8

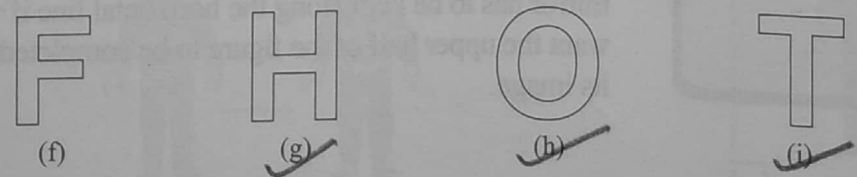
Remember

- If a line divides a shape into two identical halves, we say that the shape is symmetrical and it has reflection symmetry.
- The line dividing the shape is called the line of symmetry.
- All regular polygons have as many lines of symmetry as there are sides in them.

Exercise 12.1

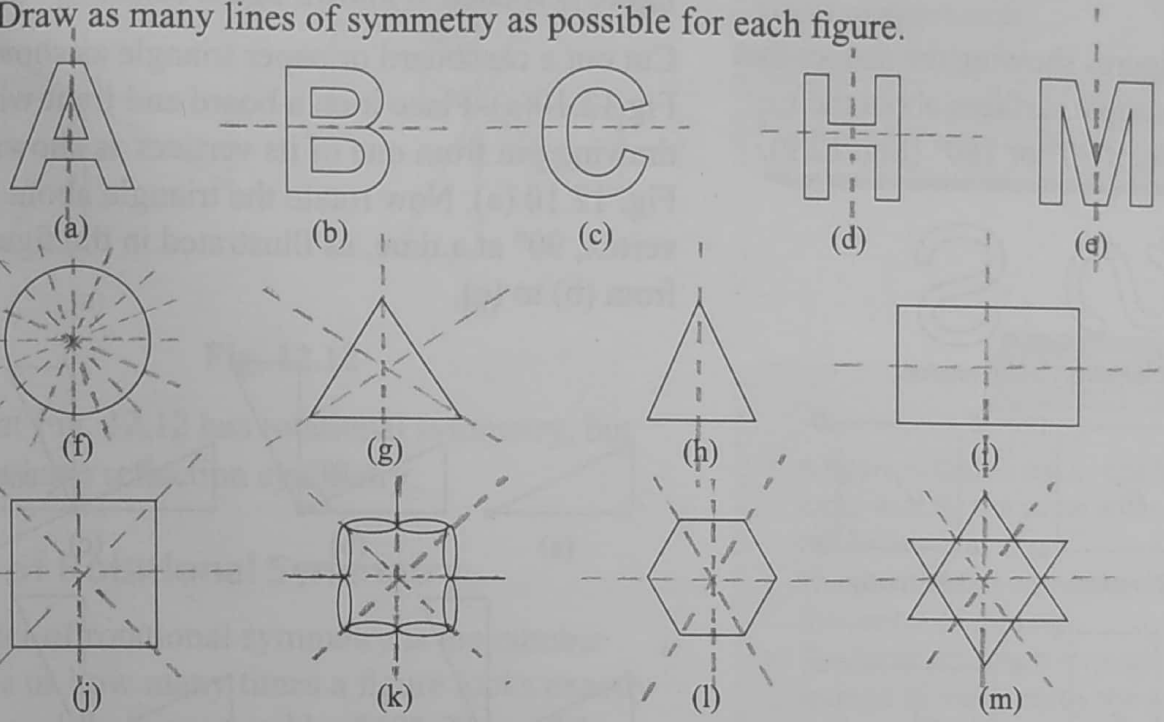
1. Which of the following have lines of symmetry?

(a) (b) (c) (d) (e)



(f) (g) (h) (i)

2. Draw as many lines of symmetry as possible for each figure.

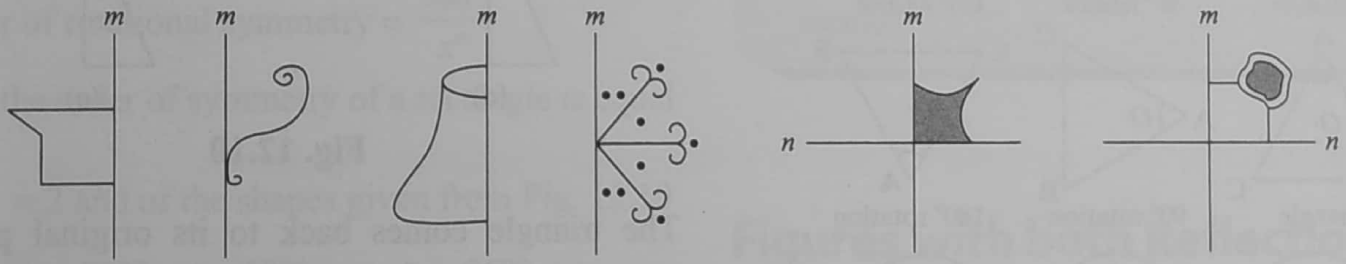


(a) (b) (c) (d) (e)

(f) (g) (h) (i)

(j) (k) (l) (m)

3. If *m* and *n* are lines of reflection symmetry, complete the following figures.



(a) (b) (c) (d) (e) (f)

4. Draw a motif and create a design by translation symmetry.

5. Draw a motif which has a vertical line of symmetry and make a pattern to create a border for bed cover.

6. Draw a motif which has a horizontal line of symmetry and make a pattern with it.

7. Make a motif without a symmetrical axis and prepare a pattern for a *saree* border.

8. From the English alphabet,
   (a) Name three letters that have translation symmetry only (i.e., the letters that have no line of symmetry).
   (b) Name three letters which have vertical line of symmetry only.
   (c) Name three letters which have horizontal symmetry only.
   (d) Name three letters which have vertical and horizontal symmetry.

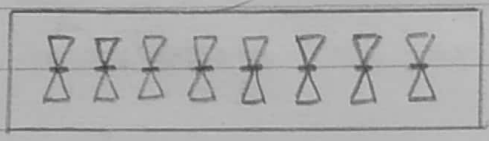
12. Symmetry.

Date
Page 34 Staller

Exercise 12.1.

4.

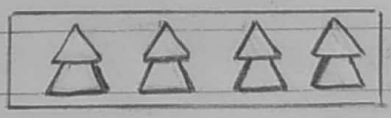
Sol: When a pattern or design is created by sliding or translating an original geometrical figure or motif repeatedly, we say that the design has translation symmetry.



5.

Sol: Here, vertical line of symmetry means the straight standing line that divides a figure into two equal parts.

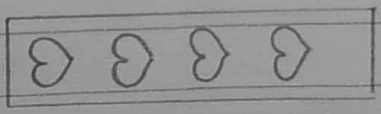
Motif : 

Border for bed cover : 

6.

Sol: Here, horizontal line of symmetry means the straing sleeping line that divides a figure into two equal parts.

Motif : 

Pattern: 

8.

a)

Soln F, G, J.

b)

Soln A, M, T.

c)

Soln B, C, E

d)

Soln H, I, O.

Exercise 12.2.

1.

a)

Sol: 90°

b)

Sol: 180°

c)

Sol: 180°

d) 180°

2.

a.

Sol: 90°

Order of rotational symmetry : 4.

b)

Sol: 180°

Order of rotational symmetry : 2.

3.

a)

Sol: 180°

Order of rotation : 2.

b) 180°

Order of rotation : 2.

c)

Sol:- 90°

Order of rotation : 4.

4.

Sol:- H, I, O.

5.

Sol:- N, Z, S.

6.

Sol:- B, M, W.

7.

Sol:- J, R, L.

8.

Sol:- Angle of rotation : 45°

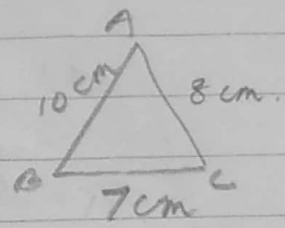
Order of rotational symmetry : 8.

14. Constructions.

Date
Page 37 Staller

Exercise 14.1

1.



Sol^n

Construction steps:

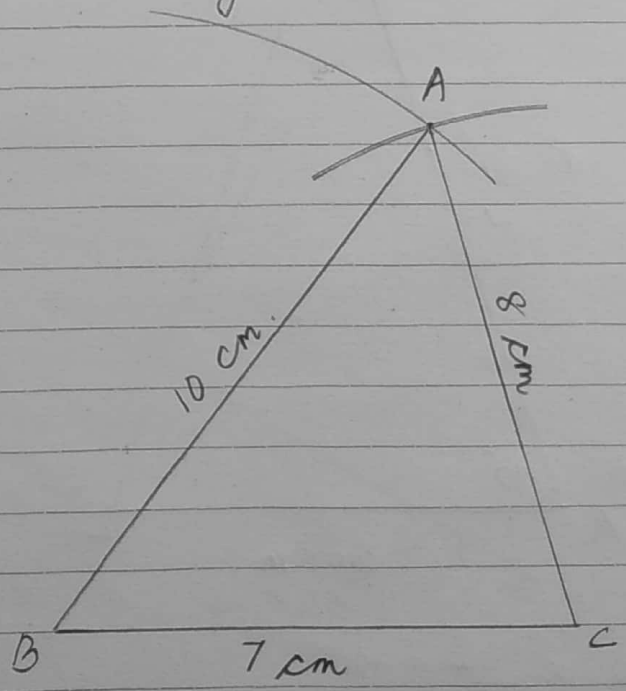
(i). Draw a rough sketch with the given measurements.

(ii) Draw line segment BC = 7cm.

(iii) With B as centre, draw an arc with radius = 10 cm.

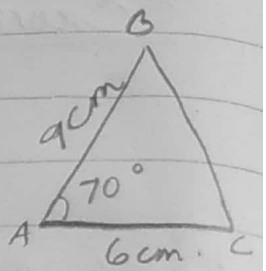
(iv) With C as centre, draw another arc with radius 8 cm to cut the previous arc at A.

(v) Join A to B and A to C. ABC is the required triangle.



4.

Sol^n



Construction steps:

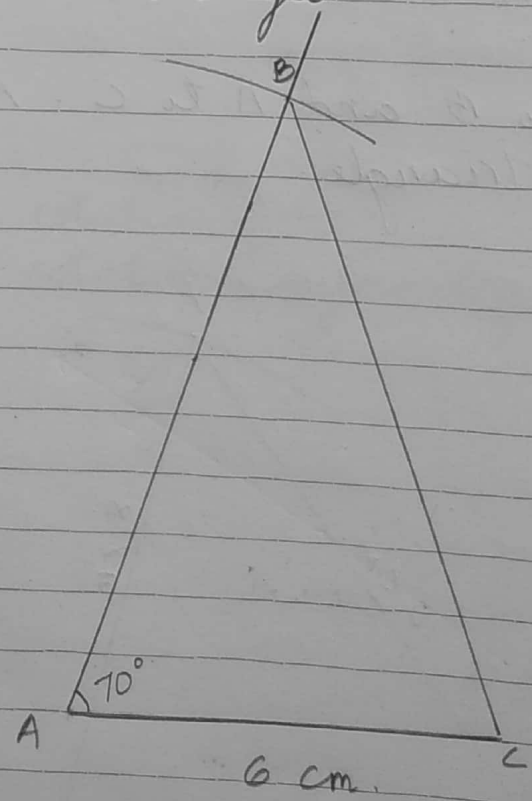
(i) Draw a rough sketch with the given measurements.

(ii). Draw a line segment AC = 6 cm.

(iii) Using the protractor, draw a 70° angle at point A.

(iv) With A as centre, measure 9 cm and draw an arc on the arm of the angle at B.

(v) Join B to A and B to C. ABC is the required triangle.

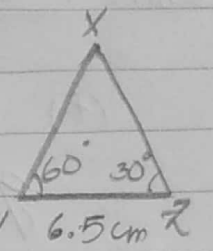


Exercise 14.2.

1.

Sol:

Construction steps:



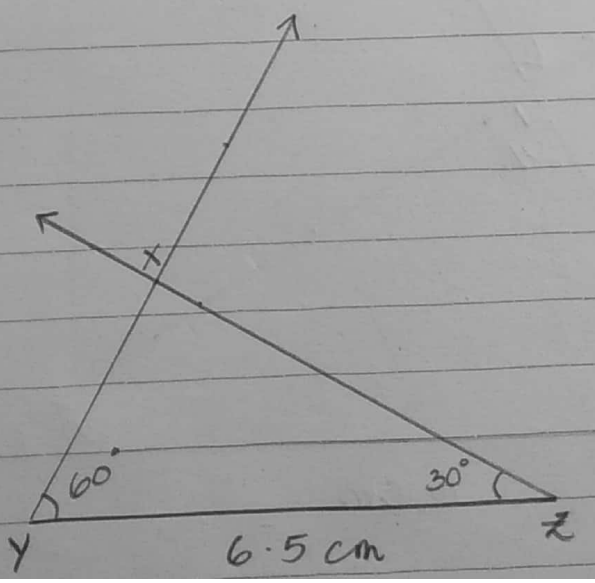
(i) Draw a rough sketch with the given measurements.

(ii) Draw a line segment $YZ = 6.5$ cm

(iii) Using the protractor draw a 60° angle at point Y.

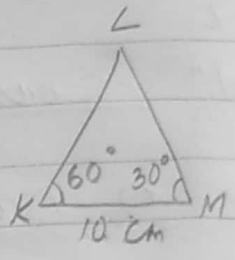
(iv) Using the protractor draw a 30° angle at point Z

(v) Find the meeting point of these two arms and name it X. XYZ is the required triangle.



3.

Sol:ⁿ **Construction steps:**



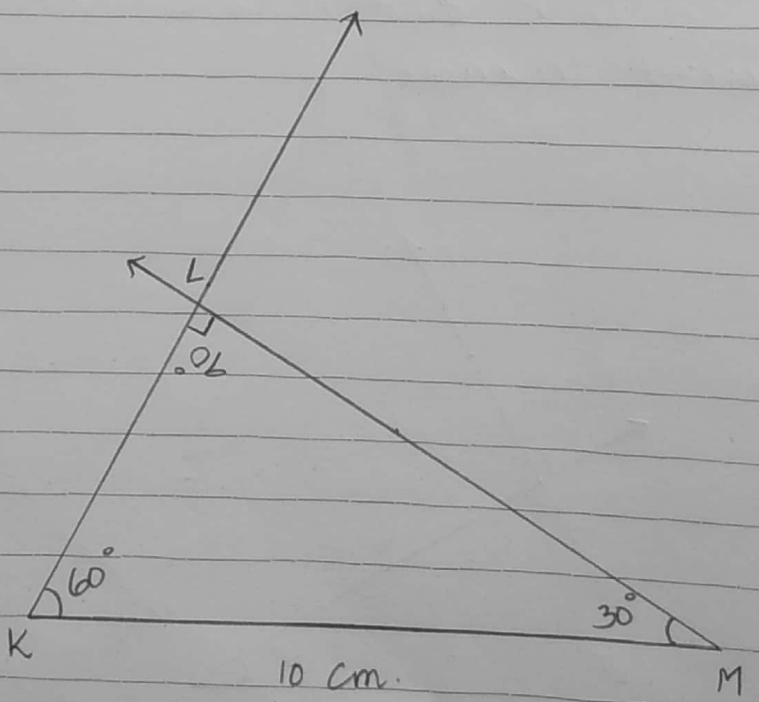
(i) Draw a rough sketch with the given measurements.

(ii) Draw a line segment KM = 10 cm

(iii) Using the protractractor, draw a 60° angle at point K.

(iv) Using the protractor, draw a 30° angle at point M.

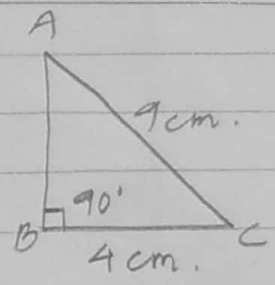
(v) Find the meeting point of these two arms and name it L. KLM is the required triangle.



Here, m ∠L = 90°

4.

Soln Construction steps:



(i) Draw a rough sketch with the given measurements.

(ii) Draw a line segment BC = 4cm.

(iii) Using the protractor, draw $\angle CBD = 90°$ at point B.

(iv) With C as centre and radius = 9cm, draw an arc to cut the ray BE at A and join AC.
ABC is the required triangle.