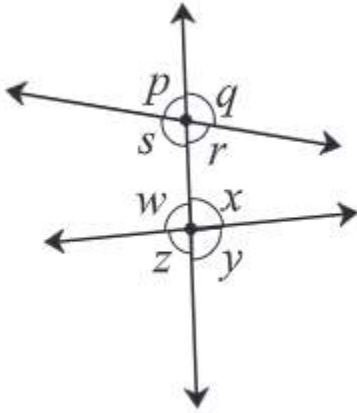## PRACTICE SET 2.1   PAGE NO: 08

1. In the adjoining figure, each angle is shown by a letter. Fill in the boxes with the help of the figure.

Corresponding angles.

(1) ∠p and ☐   (2) ∠q and ☐

(3) ∠r and ☐   (4) ∠s and ☐

Interior alternate angles.

(5) ∠s and ☐   (6) ∠w and ☐

Solution:

From the above given figure we can say that,

<u>For corresponding angles:</u>

(1) For ∠p

∠w is the angle which is on the same side and same direction of transversal.

Hence, ∠w is the corresponding angle to ∠p.

(2) For ∠q

∠x is the angle which is on the same side and same direction of transversal.

Hence, ∠x is the corresponding angle to ∠q.

(3) For ∠r

∠y is the angle which is on the same side and same direction of transversal.

Hence, ∠r is the corresponding angle to ∠y.

(4) For ∠s

∠z is the angle which is on the same side and same direction of transversal.

Hence, ∠s is the corresponding angle to ∠z.

For Interior alternate angles:
(5) For ∠s
The angel which is in the inner side as well as on the opposite side of transversal and its opposite angle is ∠x.
Hence, ∠s and ∠x form pair of Interior Alternate angel.

(6) For ∠w
The angel which is in the inner side as well as on the opposite side of transversal and its opposite angle is ∠r.
Hence, ∠w and ∠r form pair of Interior Alternate angel.

2. Observe the angles shown in the figure and write the following pair of angles.
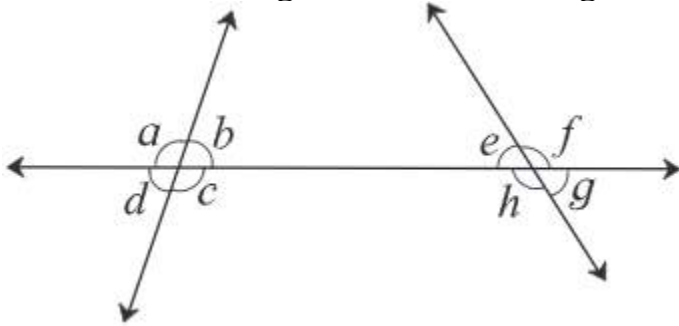
(1) Interior alternate angles
(2) Corresponding angles
(3) Interior angles
Solution:
(1) For Interior alternate angles:
When these angels are in the inner side they are called Interior alternate angels.
  ⇨ For ∠b, ∠b and ∠h form pair of Interior Alternate angel.
  ⇨ For ∠c, ∠c and ∠e form pair of Interior Alternate angel.

(2) For Corresponding angles
If the arms on the transversal of a pair of angles are in the same direction and the other arms are on the same side of the transversal, then it is called a pair of corresponding angles.
  ⇨ For ∠a, ∠a is the corresponding angle to ∠e.
  ⇨ For ∠b, ∠b is the corresponding angle to ∠f.
  ⇨ For ∠d, ∠d is the corresponding angle to ∠h.
  ⇨ For ∠c, ∠c is the corresponding angle to ∠g.

(3) Interior angles

A pair of angles which are on the same side of the transversal and inside the given lines is called a pair of interior angles.

    ⇨ For ∠b, ∠b and ∠e form pair of interior angels.

    ⇨ For ∠c, ∠c and ∠h form pair of interior angels.
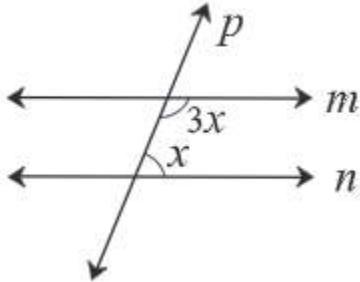
PRACTICE SET 2.2   **PAGE NO: 11**

1. Choose the correct alternative.

(1) In the adjoining figure, if line m || line n and line p is a transversal then find x.

A. 135°
B. 90°
C. 45°
D. 40°

Solution:

From the given figure we have 3x and x. 3x and x form a pair of interior angle.
By using the property of interior angels. [We know that, each pair of interior angles
formed by two parallel lines and their transversal is of supplementary angles i.e. 180°.]
x + 3x = 180
4x = 180
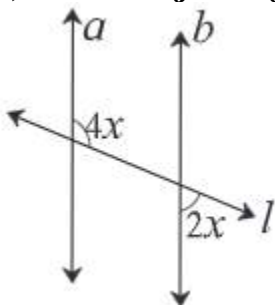x = 180/4
   = 45°
∴ The value of x is 45°.

(2) In the adjoining figure, if line a || line b and line l is a transversal then find x.

A. 90°
B. 60°
C. 45°
D. 30°

Solution:

From the figure we have 4x and 2x. 4x and 2x form a pair of interior angle.
By using the property of interior angels
4x + 2x = 180°
6x = 180°
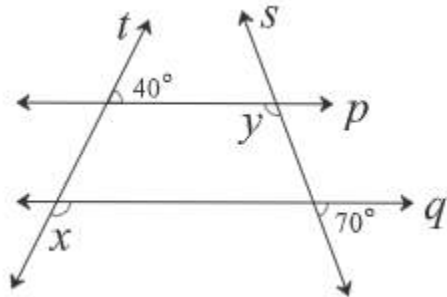x = 180/6
   = 30°
∴ The value of x is 30°.

2. In the adjoining figure line p || line q. Line t and line s are transversals. Find the measure of ∠x and ∠y using the measures of angles given in the figure.
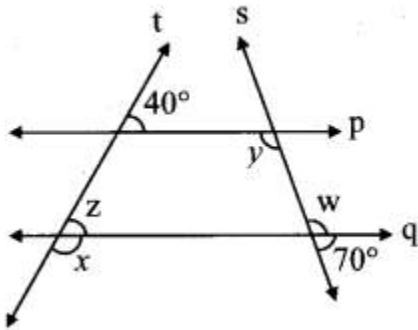

Solution:
Given:
Line p || line q, line t and line s are transversals.
Let us find the measure of ∠x and ∠y.

Firstly, Let us consider ∠z as shown in figure.
Measure of ∠z = 40° … (i) [Since, they are corresponding angles]
So,
m∠x + m∠z = 180° [Since, angles are in a linear pair]
m∠x + 40° = 180° [From equation (i)]
m∠x= 180° – 40°
m∠x = 140°

Now, let us consider ∠w as shown in the figure.
m∠w + 70° = 180° [Since, angles are in a linear pair]
m∠w = 180° – 70°
m∠w = 110° …(ii)

It is given that, line p || line q and line s is a transversal.
So, m∠y = m∠w [by using alternate angles]
m∠y =110° [From equation (ii)]
∴ The measure of ∠x is 140° and ∠y is 110°.

3. In the adjoining figure. line p || line q. line l || line m. Find measures of ∠a, ∠b, and ∠c, using the measures of given angles. Justify your answers.
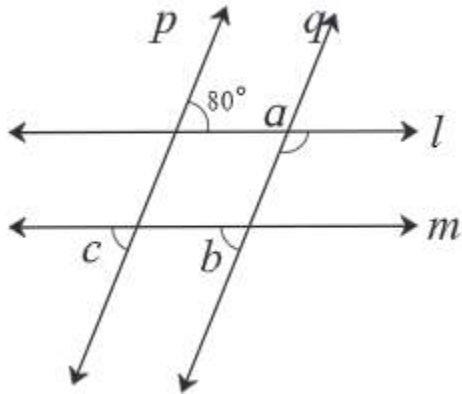
Solution:
Given:
Line p || line q and line l are transversal.
Line l || line m and line p is a transversal.
Line p || line q and line m is a transversal.

Firstly let us find the measure of ∠a
Line p || line q and line l are transversal.
So,
m∠a + 80° = 180° [Since, they are interior angles]
m∠a= 180° – 80°
m∠a= 100°

Now, line l || line m and line p is a transversal.
So, m∠c = 80° … (i) [By using exterior alternate angles]

Line p || line q and line m is a transversal.
So, m∠b = m∠c … [Since, they are corresponding angles]

m∠b = 80° … [From equation (i)]
∴ The measure of ∠a is 100°, m∠b is 80°, m∠c is 80°.

4. In the adjoining figure, line a || line b. line l is a transversal. Find the measures of ∠x, ∠y, ∠z using the given information.
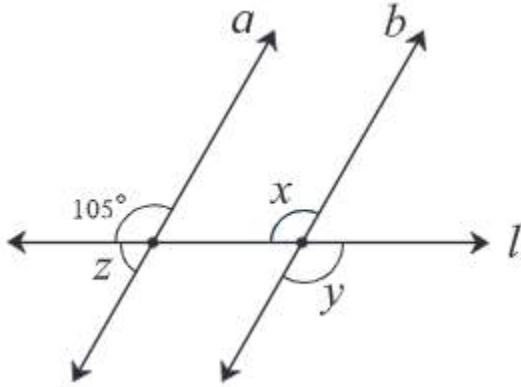
Solution:
Given:
Line a || line b and line l is a transversal.
So,
m∠x = 105° … (i) [Since, it is a corresponding angle]

Now,
m∠y = m∠x [Since, they are vertically opposite angles]
So, m∠y = 105° …[From equation (i)]

Now, m∠z + 105° = 180° [Since, angles are in a linear pair]
m∠z = 180°- 105°
m∠z = 75°
∴ The measure of ∠x is 105°, m∠y is 105°, m∠z is 75°.

5. In the adjoining figure, line p || line l || line q. Find ∠x with the help of the measures given in the figure.
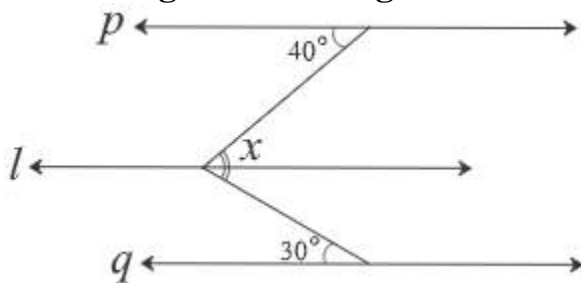
Solution:

Let us mark few points as such,
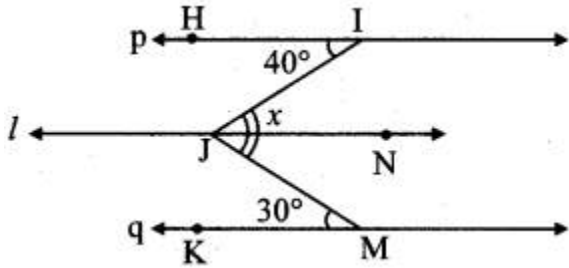
It is given that,
Line p ∥ line l and line IJ is a transversal.
So,
m∠IJN = m∠JIH [Since they are alternate angles]
m∠IJN = 40° … (i)

Now,
Line l ∥ line q and line MJ is a transversal.
So, m∠MJN = m∠JMK [Since they are alternate angles]
m∠MJN = 30° … (ii)

Now, m∠x = m∠IJN + m∠MJN [By using angle addition property]
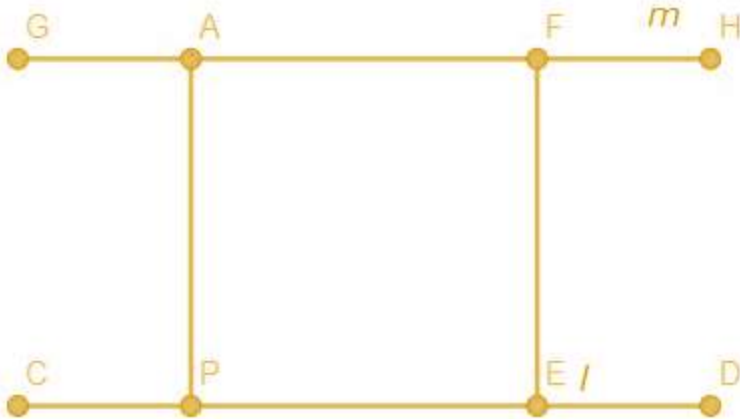We get,
40° + 30° [From equation (i) and (ii)]
m∠x = 70°
∴ The measure of ∠x is 70°.

PRACTICE SET 2.3

PAGE NO: 13

1. Draw a line l. Take a point A outside the line. Through point A draw a line parallel to line l.
Solution:

Steps to construct:
a) Let us draw a line segment of any length. Mark it as CD.
b) Now from any point say P on that line segment draw a line perpendicular at any distance above and name that point A.
c) Now draw another perpendicular line say E of same length as of AP, and in same direction, name that point as F.
d) Draw a line through those points.
e) This line is parallel to given line *l*.

2. Draw a line l. Take a point T outside the line. Through point T draw a line parallel to line l.
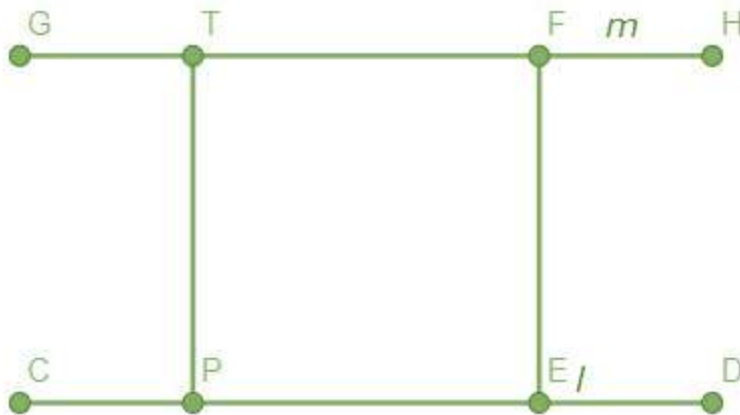**Solution:**

Steps to construct:

a) Let us draw a line segment of any length. Mark it as CD.

b) Now from any point say P on that line segment draw a line perpendicular at any distance above or and name that point T.

c) Now draw another perpendicular line say E of same length as of TP, and in same direction, name that point as F.

d) Draw a line through those points.

e) This line is parallel to given line *l*.

3. Draw a line m. Draw a line n which is parallel to line m at a distance of 4 cm from it.

Solution:
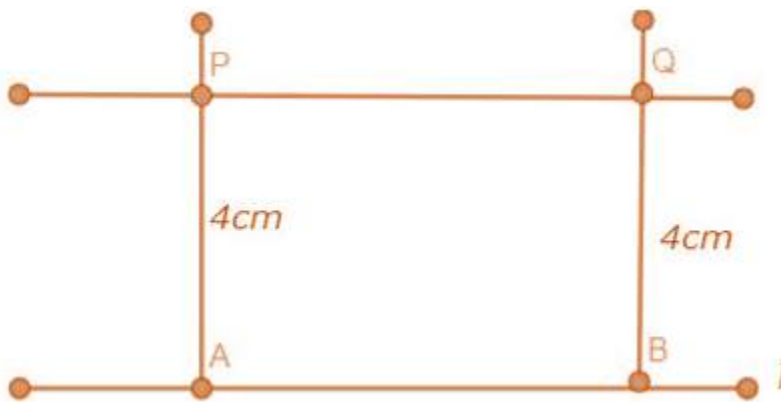
Steps to construct:

a) Draw line l.

b) Take two points A and B on the line l.

c) Draw perpendicular lines above to the line l from points A and B with a distance of 4cm, and mark that points as P and Q.

d) Join line PQ.

f) Line PQ is a line parallel to the line l at a distance 4cm. Hence required line is obtained.