EXERCISE 32(B)

1. Find the area of a rectangle whose:
(i) Length = 15 cm breadth = 6.4 cm
(ii) Length = 8.5 m breadth = 5 m
(iii) Length = 3.6 m breadth = 90 cm
(iv) Length = 24 cm breadth = 180 mm
Solution:
Given
Length of the rectangle = 15 cm
Breadth of the rectangle = 6.4 cm
Hence, the area of the rectangle is calculated as follow
Area = Length × Breadth
Area = 15 cm × 6.4 cm
We get,
= 96 cm²
Hence, the area of the rectangle = 96 cm²
(ii) Given
Length of the rectangle = 8.5 m
Breadth of the rectangle = 5 m
Hence, the area of the rectangle is calculated as follows:
Area = Length × Breadth
Area = 8.5 m × 5 m
We get,
= 42.5 m²
Hence, the area of the rectangle = 42.5 m²
(iii) Given
Length of the rectangle = 3.6 m
Breadth of the rectangle = 90 cm
We know that,
100 cm = 1 m
Hence, the breadth can be converted into metre from centimetre as follows
Breadth = 90 cm
= 90 / 100 m
We get,
= 0.9 m
Hence, the area of the rectangle is calculated as follows:
Area = Length × Breadth
Area = 3.6 m × 0.9 m
We get,

= 3.24 m²

Hence, the area of the rectangle = 3.24 m²

(iv) Given

Length of the rectangle = 24 cm

Breadth of the rectangle = 180 mm

We know that,

10 mm = 1 cm

Hence, the breadth can be converted into centimetre from millimetre as below

Breadth = 180 mm

= 180 / 10 cm

We get,

= 18 cm

Hence, the area of the rectangle is calculated as follows:

Area = Length × Breadth

Area = 24 cm × 18 cm

We get,

= 432 cm²

Therefore, the area of the rectangle = 432 cm²

2. Find the area of a square, whose each side is:

(i) 7.2 cm

(ii) 4.5 m

(iii) 4.1 cm

Solution:

(i) Given

Each side of square = 7.2 cm

Hence, the area of square can be calculated as below

Area = (side)²

Area = (7.2 cm)²

= 7.2 cm × 7.2 cm

We get,

= 51. 84 cm²

Hence, the area of the square = 51.84 cm²

(ii) Given

Each side of a square = 4.2 m

Hence, the area of square can be calculated as below

Area = (side)²

Area = (4.5 m)²

= 4.5 m × 4.5 m

We get,

$= 20.25 \text{ m}^2$

Hence, the area of the square $= 20.25 \text{ m}^2$

(iii) Given

Each side of a square $= 4.1$ cm

Hence, the area of square can be calculated as below:

Area $= (\text{side})^2$

Area $= (4.1 \text{ cm})^2$

$= 4.1 \text{ cm} \times 4.1 \text{ cm}$

We get,

$= 16.81 \text{ cm}^2$

Hence, the area of the square $= 16.81 \text{ cm}^2$

3. If A denotes area of a rectangle, l represents its length and b represents its breadth, find:

(i) l, if A = 48 cm² and b = 6 cm

(ii) b, if A = 88 m² and l = 8 m

Solution:

(i) $A = 48 \text{ cm}^2$ and $b = 6$ cm

The length of the rectangle can be calculated as below:

Area $=$ Length $\times$ Breadth

$A = l \times b$

$l = A / b$

Substituting the value of A and b, we get,

$l = 48 / 6$

$l = 8$ cm

Therefore, the length of the rectangle $= 8$ cm

(ii) Given

$A = 88 \text{ m}^2$ and $b = 8$ m

The breadth of the rectangle is calculated as below:

Area $=$ Length $\times$ Breadth

$A = l \times b$

$b = A / l$

Substituting the values of A and l, we get,

$b = 88 \text{ m}^2 / 8 \text{ m}$

$b = 11$ m

Therefore, the breadth of the rectangle $= 11$ m

4. Each side of a square is 3.6 cm; find its
(i) perimeter
(ii) area
Solution:
(i) Given
Each side of a square = 3.6 cm
Therefore, the perimeter of square can be calculated as follows:
Perimeter = 4 × side
= 4 × 3.6 cm
We get,
= 14.4 cm
Hence, the perimeter of the square = 14.4 cm
(ii) Given
Each side of a square = 3.6 cm
Hence, the area of square can be calculated as below:
Area = (side)^2
Area = (3.6 cm)^2
= 3.6 cm × 3.6 cm
We get,
= 12.96 cm^2
Hence, the area of the square = 12.96 cm^2

5. The perimeter of a square is 60 m, find:
(i) its each side its area
(ii) its new area obtained on increasing
(iii) each of its sides by 2 m
Solution:
(i) Given
Perimeter of square = 60 m
Hence, the side of square can be calculated as follows:
side = Perimeter / 4
= 60 m / 4
We get,
= 15 m
Therefore, the side of the square = 15 m
(ii) Given
Each side of a square = 15 m
Hence, the area of square can be calculated as below:
Area = (side)^2

Area = $(15 \text{ m})^2$
= 15 m × 15 m
We get,
= 225 m²
Therefore, the area of the square = 225 m²
(iii) By increasing each side of the square by 2m,
New side = 17 m
Hence, the new area of square can be calculated as below:
Area = (side)²
Area = $(17 \text{ m})^2$
= 17 m × 17 m
We get,
= 289 m²
Therefore, the new area of the square = 289 m²

6. Each side of a square is 7 m. If its each side be increased by 3 m, what will be the increase in its area?
Solution:
Given
The side of square = 7 m
Hence, the area of square can be calculated as follows:
Area = (side)²
Area = $(7 \text{ m})^2$
= 7 m × 7 m
We get,
= 49 m²
Given each side is increased by 3 m,
So, the new length of side will be = 3 m + 7 m
= 10 m
Hence, the area of square can be calculated as follows:
Area = (side)²
Area = $(10 \text{ m})^2$
= 10 m × 10 m
We get,
= 100 m²
Increase in area can be calculated as below:
Increase in area = 100 m² – 49 m²
= 51 m²
Therefore, the increase in area of square = 51 m²

7.The perimeter of a square field is numerically equal to is area. Find each side of the square.

Solution:

Given

Area of the square is equal to the perimeter of the square

Let us consider each side of square is a

Perimeter of square = Area of square

Hence,

$4 \times a = a^2$

$a^2 / a = 4$

We get,

$a = 4$

Therefore, each side of square = 4

8. A rectangular piece of paper has area = 24 cm^2 and length = 5 cm. Find its perimeter.

Solution:

Given

Area of rectangular piece of paper = 24 cm^2

Length of the rectangle = 5 cm

We know that,

Area of rectangle = length × breadth

24 cm^2 = 5 cm × breadth

breadth = 24 cm^2 / 5 cm

breadth = 4.8 cm

The perimeter of a rectangular piece of paper can be calculated as follows:

Perimeter = 2 (Length + Breadth)

Perimeter = 2 (5 cm + 4.8 cm)

= 2 × 9.8 cm

We get,

= 19.6 cm

Therefore, the perimeter of the paper = 19.6 cm

9. Find the perimeter of a rectangle whose area = 2600 m^2 and breadth = 50 m.

Solution:

Given

The area of rectangle = 2600 m^2

Breadth of the rectangle = 50 m

The length of the rectangle can be calculated as below:

Length = Area / breadth

= 2600 m² / 50 m

We get,

= 52 m

Hence, the perimeter of rectangle can be calculated as below:

Perimeter = 2 (Length + Breadth)

Perimeter = 2 (52 m + 50 m)

= 2 × 102 m

We get,

= 204 m

Therefore, the perimeter of the rectangle = 204 m

10. What will happen to the area of a rectangle, if its length and breadth both are trippled?

Solution:

Let us consider the length of the rectangle is l and breadth of the rectangle is b

Area = length × breadth

Since,

Length and breadth of the rectangle are trippled

So, new length and breadth will be = 3l × 3b

Hence, the new area of the rectangle is,

Area = 3l × 3b

We get,

Area = 9 × l × b

Therefore, the new area will be 9 times than the original area of the rectangle

11. Length of a rectangle is 30 m and its breadth is 20 m. Find the increase in its area if its length is increased by 10 m and its breadth is doubled.

Solution:

Given

The length of a rectangle = 30 m

The breadth of rectangle = 20 m

The area of the rectangle can be calculated as follows:

Area = length × breadth

= 30 m × 20 m

= 600 m²

Also, given that the length is increased by 10 m and its breadth is doubled

Hence, the new length and breadth is as follows:

New length = 30 m + 10 m

= 40 m
New breadth = 20 m × 2
= 40 m
Therefore, the new area of the rectangle is,
Area = 40 m × 40 m
= 1600 m²
Increase in area = 1600 m² – 600 m²
Increase in area = 1000 m²
Therefore, the increase in area = 1000 m²

12. The side of a square field is 16 m. What will be increase in its area, if:
(i) each of its sides is increased by 4 m
(ii) each of its sides is doubled
Solution:
Given
Side of the square field = 16 m
Hence, area of square field can be calculated as follows:
Area = (side)²
= (16 m)²
= 16 m × 16 m
We get,
= 256 m²
(i) Since the side is increased by 4 m, then the length of new side will be
= 16 + 4
= 20 m
Hence, the new area of square can be calculated as follows:
Area = (side)²
Area = (20 m)²
= 20 m × 20 m
We get,
= 400 m²
Increase in the area of the square field will be = 400 m² – 256 m²
= 144 m²
Hence, the increase in the area of the square field = 144 m²
(ii) Given
Each side of its length is doubled
Hence, the new side will be = 16 m × 2
= 32 m
The area of square can be calculated as follows:

Area = (side)^2
Area = (32)^2
= 32 m × 32 m
We get,
= 1024 m^2
Thus, the increase in area of the square field will be = 1024 m^2 − 256 m^2
= 768 m^2
Therefore, the increase in the area of the square field = 768 m^2

13. Each rectangular tile is 40 cm long and 30 cm wide. How many tiles will be required to cover the floor of a room with length = 4.8 m and breadth = 2.4 m
Solution:
Given
Length of the rectangular tile = 40 cm
Breadth of the rectangular tile = 30 cm
Length of the floor = 4.8 m
Breadth of the floor = 2.4 m
We know that,
100 cm = 1 m
Hence,
Length = 40 cm
= 40 / 100 m
We get,
= 0.4 m
Breadth = 30 cm
= 30 / 100 cm
We get,
= 0.3 m
The area of rectangular tile is calculated as,
Area = Length × Breadth
Area = 0.4 m × 0.3 m
We get,
= 0.12 m^2
The area of the floor is calculated as,
Area = Length × Breadth
Area = 4.8 m × 2.4 m
We get,
= 11.52 m^2
Total number of tiles required = (Area of the floor) / (Area of each tile)

= 11.52 m² / 0.12 m²
We get,
= 96
Therefore, total number of tiles required to cover the floor = 96

14. Each side of a square tile is 60 cm. How many tiles will be required to cover the floor of a hall with length = 50 m and breadth = 36 m.
Solution:
Given
The length of the each side of square = 60 cm
Length of the floor = 50 m
Breadth of the floor = 36 m
We know that,
100 cm = 1 m
side = 60 cm
= 60 / 100 m
We get,
= 0.6 m
Hence, the area of the square tile is calculated as follows:
Area = (side)²
= (0.6 m)²
= 0.6 m × 0.6 m
We get,
= 0.36 m²
The area of the floor is calculated as follows:
Area = Length × Breadth
Area = 50 m × 36 m
We get,
= 1800 m²
Hence, number of tiles required = (Area of the floor) / (Area of each tile)
= 1800 m² / 0.36 m²
We get,
= 5000
Therefore, the number of tiles required to cover the floor = 5000

15. The perimeter of a square plot = 360 m. Find:
(i) its area
(ii) cost of fencing its boundary at the rate of Rs 40 per metre
(iii) cost of levelling the plot at Rs 60 per square metre

Solution:
Given
The perimeter of square plot = 360 m
Hence,
Side of square plot = Perimeter / 4
= 360 m / 4
We get,
= 90 m
Therefore, the side of square plot = 90 m
(i) Area of square plot can be calculated as follows:
Area = (side)^2
= (90 m)^2
= 90 m × 90 m
We get,
= 8100 m^2
Therefore, the area of the square plot = 8100 m^2
(ii) Given
Cost of fencing = Rs 40 per meter
Cost of fencing can be calculated as follows:
Cost = Perimeter × Rate
= 360 m × 40
We get,
= Rs 14400
Therefore, cost of fencing = Rs 14400
(iii) Given
The cost of leveling = Rs 60 per square meter
Cost of leveling can be calculated as follows:
Cost = Area × Rate
= 8100 m^2 × 60
We get,
= Rs 486000
Therefore, the cost of leveling the plot = Rs 486000