RS Aggarwal Solutions for Class 6 Maths Chapter 21- Concept of Perimeter and Area

Exercise 21A

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1.

Solution

(i) Given length = 16.8 cm

Breadth = 6.2 cm

Perimeter of a rectangle = 2 (length + breadth)

= 2 (16.8 cm + 6.2 cm)

= 2 (23)

= 2 × 23

= 46 cm

(ii) Given length = 2 m 25 cm = 200 + 25 = 225 cm {1m = 100 cm}

Breadth = 1 m 50 cm = 100 + 50 = 150 cm {1m = 100 cm}

Perimeter of a rectangle = 2 (length + breadth)

= 2 (225 + 150)

= 2 (375)

= 2 × 375

= 750 cm

(iii) Given length = 8 m 5 dm = (80 + 5) = 85 dm {1m = 10 dm}

Breadth = 6 m 8 dm = (60 + 8) = 68 dm {1m = 10 dm}

Perimeter of rectangle = 2 (length + breadth)

= 2 (85 + 68)

= 2 (153)

= 2 × 153

= 306 dm

2.

Solution

Given length of the field = 62 m long

Breadth of the field = 33 m wide

Perimeter of the field = 2 (length + breadth)

= 2 (62 + 33)

= 2 (95)

= 2 × 95

= 190 m

Also, given cost of fencing per meter is Rupees 16

Total cost of fencing will be = (16 × 190)

= Rupees 3,040

∴ Total cost of fencing is Rupees 3,040

3.

Solution

Given the length and breadth of the field are in the ratio 5: 3

Let length of the field be 5x

Breadth of the field be 3x

Perimeter of a rectangle = 2 (length + breadth)

= 2 (5x + 3x)

= 2 (8x)

= 2 × 8x

= 16x

Given perimeter = 128 m

16x = 128

x = 128 / 16

x = 8

length = 5x = 5 × 8

= 40 m

Breadth = 3x = 3 × 8

= 24 m

∴ the dimensions of the field are 40 m and 24 m

4.

Solution

Given

Total cost of the field = Rs 1980

Rate of the field = Rupees 18 per metre

Width of the field = 23 m

Perimeter of the field = (Total cost of the field) / (Rate)

= 1980 / 18

= 110 m

Let x m be the length of the field

Perimeter of the field = 2 (x + 23) m

∴ 2 (x + 23) = 110

x + 23 = 110 / 2

x + 23 = 55

x = 55 – 23

x = 32 m

Hence, the length of the field is 32 m

5.

Solution

Given total cost of the field = Rupees 3300

Rate of fencing = Rupees 25

Perimeter of the field = Total cost / Rate

= 3300 / 25

= 132 m

Given the length and breadth of the field are 7x and 4x

Perimeter of the field = 2(7x + 4x)

= 2 (11x)

= 22x

∴ 22x = 132

x = 132 / 22

x = 6

Hence, length of the field = 7x

= 7 × 6

= 42 m

Breadth of the field = 4x

= 4 × 6

= 24 m

6.

(i) 3.8 cm

(ii) 4.6 m

(iii) 2 m 5 dm

Solutions

(i) Given side of square = 3.8 cm

Perimeter of the square = (4 × side)

= 4 × 3.8

= 15.2 cm

(ii) Given side of the square = 4.6 m

Perimeter of the square = (4 × side)

= 4 × 4.6

= 18.4 cm

(iii) Given side of the square = 2 m 5 dm {1m = 10 dm}

= 25 dm

Perimeter of the square = (4 × side)

= 4 × 25

= 100 dm

Exercise 21B

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1.

Solutions

(i) Given radius = 28 cm

We know that

Circumference of the circle i.e C = 2πr

= (2 × 22 / 7 × 28) {π = 22 / 7}

= (56 × 22 / 7)

= 176 cm

Thus, the circumference of the circle is 176 cm

(ii) Given radius = 10.5 cm

We know that

Circumference of the circle, C = 2πr

= (2 × 22 / 7 × 10.5) {π = 22 / 7}

= (21 × 22 / 7)

= 66 cm

Thus, the circumference of the circle is 66 cm

(iii) Given radius = 3.5 m

We know that

Circumference of the circle, C = 2πr

= (2 × 22 / 7 × 3.5)

= (7 × 22 / 7)

= 22 m

Thus, the circumference of the circle is 22 m

2.

(i) 14 cm

(ii) 35 cm

(iii) 10.5 m

Solutions

(i) Given

Diameter = 14 cm

Circumference of the circle, C = 2πr

= π × (2r)

= π × diameter of the circle {diameter = 2r}

= 22 / 7 × 14

= 44 cm

Hence, the circumference of the circle is 44 cm

(ii) Given

Diameter = 35 cm

Circumference of the circle, C = 2πr

= π × (2r)

= π × diameter of the circle {diameter = 2r}

= 22 / 7 × 35

= 110 cm

Hence, the circumference of the circle is 110 cm

(iii) Given

Diameter = 10.5 m

Circumference of the circle, C = 2πr

= π × (2r)

= π × diameter of the circle {diameter = 2r}

= 22 / 7 × 10.5

= 33 m

Hence, the circumference of the circle is 33 m

3.

Solution

Given

Circumference of the circle = 176 cm

Let r cm be the radius of the given circle

Circumference of the circle = 2πr

2πr = 176

r = 176 / 2π

r = (176 / 2) × (7 / 22) {π = 22 / 7}

r = 88 × 0.31

r = 27.28

r = 28 cm

Hence, the radius of the circle is 28 cm

RS Aggarwal Solutions for Class 6 Maths Chapter 21-
Concept of Perimeter and Area

Exercise 21C

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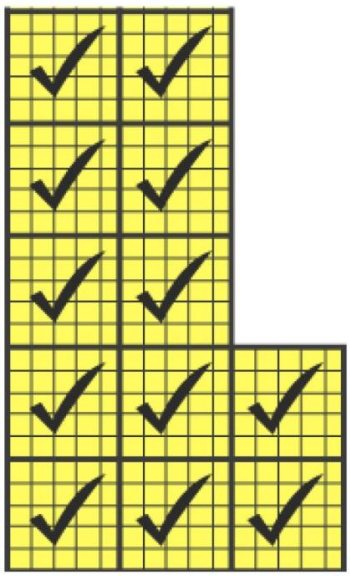
1.

Solution



This figure contains 12 complete squares

Area of 1 small square = 1 cm^2

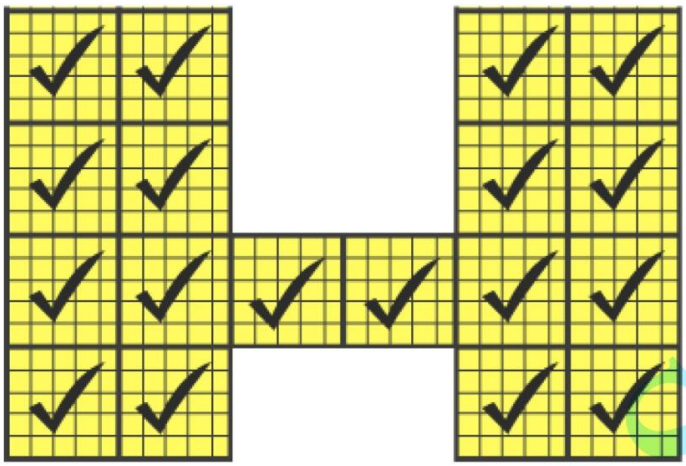
Area of the figure = Number of complete squares × Area of the square

= (12 × 1) sq cm

= 12 sq cm

2.

Solution



This figure contains 18 complete squares

Area of 1 small square = 1 cm^2

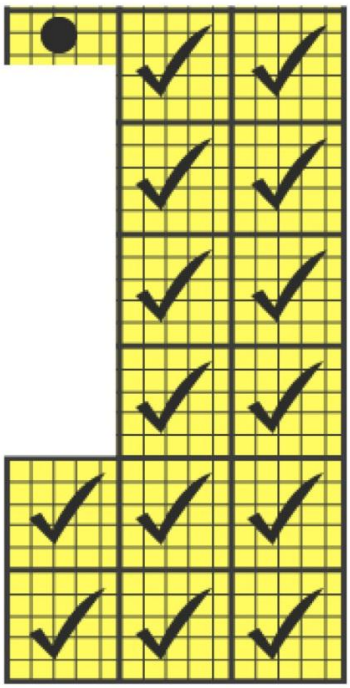
Area of the figure = Number of complete square × Area of the square

= (18 × 1) sq cm

= 18 sq cm

3.

Solution



This figure contains 14 complete square and 1 half square

Area of 1 small square = 1 cm^2

Area of the figure = Number of complete square × Area of the square

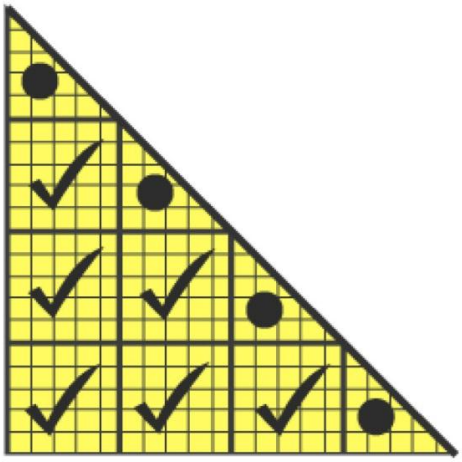
= (14 × 1) + (1 × 1 / 2)

= 14 + 1 / 2

= 14 (1 / 2) sq cm

4.

Solution



This figure contains 6 complete squares and 4 half squares

Area of 1 small square = 1 cm^2

Area of the figure = Number of complete squares × Area of the square

= (6 × 1) + (4 × 1 / 2)

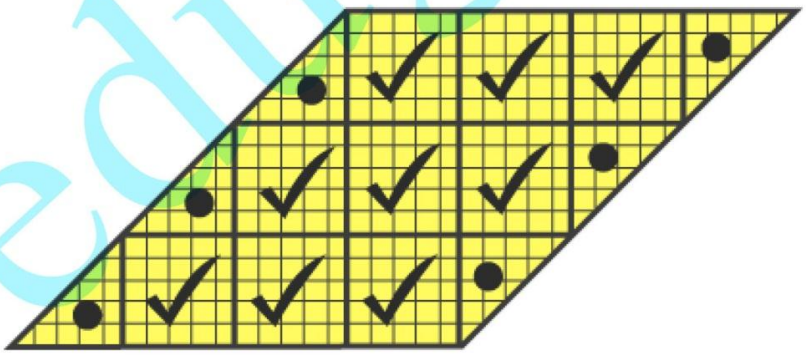
= 6 + 4 / 2

= 16 / 2 {taking LCM}

= 8 sq cm

5.

Solution



This figure contains 9 complete squares and 6 half squares

Area of 1 small square = 1 cm^2

Area of the figure = Number of complete squares × Area of the square

= (9 × 1) + (6 × 1 / 2)

= 9 + 6 / 2

= 24 / 2 {taking LCM}

= 12 sq cm

Exercise 21D

1.

Solutions

(i) Given

Length = 46 cm

Breadth = 25 cm

Area of the rectangle = (length × breadth) sq units

= (46 × 25) cm^2

= 1150 cm^2

(ii) Given

Length = 9 m

Breadth = 6 m

Area of the rectangle = (length × breadth) sq units

= (9 × 6) m^2

= 54 m^2

(iii) Given

Length = 14.5 m

Breadth = 6.8 m

Area of the rectangle = (length × breadth) sq units

= (14.5 × 6.8) m^2

= (145 / 10 × 68 / 10) m^2

= (9860 / 100) m^2

= 98.6 m^2

(iv) Given

Length = 2 m 5 cm

= 200 cm + 5 cm {1 m = 100 cm}

= 205 cm

Breadth = 60 cm

Area of the rectangle = (length × breadth) sq units

= (205 × 60) cm^2

= 12300 cm^2

(v) Given

Length = 3.5 km

Breadth = 2 km

Area of the rectangle = (length × breadth) sq units

= (3.5 × 2) km^2

= (35 / 10 × 2) km^2

= 7 km^2

2.

Solution

Given

Side of square plot = 14 m

Area of a square = $(side)^2$ sq units

= $(14)^2$ m^2

= (14 × 14) m^2

= 196 m^2

Hence, area of the square plot = 196 m^2

3.

Solution

Length of the table = 2 m 25 cm

= (2 + 0.25) m [1 m = 100 cm]

= 2.25 m

Breadth of the table = 1 m 20 cm

= (1 + 0.20) m [1 m = 100 cm]

= 1.20 m

Area of the rectangle = (length × breadth) sq units

= (2.25 × 1.20) m^2

= [(225 / 100) × (120 / 100)] m^2

= 2.7 m^2

Area of the table is 2.7 m^2

4.

Solution

Given

Length of the carpet = 30 m 75 cm

= (30 + 0.75) cm [1 m = 100 cm]

= 30.75 m

Breadth of the carpet is given 80 cm

= 0.80 m [1 m = 100 cm]

Area of the carpet = (Length × breadth) sq units

= (30.75 × 0.80) m^2

= (3075 / 100 × 80 / 100) m^2

= 24.6 m^2

Carpet cost of 1 m^2 = Rupees 150

Carpet cost of 24.6 m^2 = (24.6 × 150)

= Rupees 3690

Hence, cost of carpet at rupees 150 per square metre is rupees 3690

5.

Solution

Given

Length of sheet of paper = 3 m 24 cm

= 324 cm [1 m = 100 cm]

Breadth of sheet of paper = 1 m 72 cm

= 172 cm [1 m = 100 cm]

Area of the sheet of paper = (length × breadth)

= (324 × 172) cm^2

= 55728 cm^2

Length of the piece of paper to make 1 envelope = 18 cm

Breadth of the piece of paper to make 1 envelope = 12 cm

Area of the piece of paper to make 1 envelope = (length × breadth)

= (18 × 12) cm^2

= 216 cm^2

Number of envelope = (Area of the sheet of paper) / (Area of the piece of paper to make 1 envelope)

Number of envelopes = 55728 / 216

Number of envelopes = 258 envelopes

Number of envelopes that can be made is 258

6.

Solution

Given

Length of the room = 12.5 m

Breadth of the room = 8 m

Area of the room = (length × breadth)

= (12.5 × 8) m^2

= 100 m^2

Square carpet side = 8 m

Area of the square carpet = $(side)^2$

= $(8)^2$

= 8 × 8

= 64 m^2

Area of the floor which is not carpeted = (Area of the room) – (Area of the carpet)

= (100 – 64) m^2

= 36 m^2

Hence, area of the room which is not carpeted is 36 m^2

7.

Solution

Given

Length of the road = 150 m

= 15000 cm [1 m = 100 cm]

Breadth of the road = 9 m

= 900 cm [1 m = 100 cm]

Area of the road = (length × breadth)

= (15000 × 900)

= 13500000 cm^2

Given, length of the brick = 22.5 cm

Breadth of the brick = 7.5 cm

Area of the brick = (length × breadth)

= (22.5 × 7.5)

= 168.75 cm^2

Number of bricks = Area of the road / Area of one brick

= 13500000 / 168.75

Number of bricks = 80000 bricks

8.

Solution

Given,

Length of the room = 13 m

Breadth of the room = 9 m

Area of the room = (length × breadth)

= (13 × 9) m^2

= 117 m^2

Let the required carpet length be x m

Breadth of the carpet = 75 cm = 0.75 m [1 m = 100 cm]

Area of the carpet = (0.75 × x) m^2

= 0.75x m^2

For carpeting the room

Area covered by the carpet = Area of the room

0.75x = 117

x = 117 / 0.75

x = 156 m

Hence, length of the carpet = 156 m

1 m carpet cost = rupees 65

156 m carpet cost will be = (156 × 65)

= Rupees 10140

9.

Solution

Let the length of the rectangular park be 5x

Breadth of the rectangular park be 3x

Perimeter of the rectangular park = 2 (length + breadth)

= 2 (5x + 3x)

= 2 (8x)

= 16x

Given perimeter of the rectangular park = 128 m

128 = 16x

x = 128 / 16

x = 8

Hence, length of the park = 5x

= 5 × 8

= 40 m

Breadth of the park = 3x

= 3 × 8

= 24 m

Area of the park = (length × breadth)

= (40 × 24)

= 960 m^2

Exercise 21E

PAGE NO: 231

1.

Solution

Sides of the rectangle in the ratio = 7: 5

Perimeter = 96 cm

Hence, Length + Breadth = 96 / 2

= 48 cm

Let length be = 7x

Breadth be = 5x

7x + 5x = 48

12x = 48

x = 48 / 12

x = 4

Length of the rectangle = 7x

= 7 × 4

= 28 cm

Option (b) is the correct answer

2.

Solution

Area of the rectangle = 650 cm^2

Breadth = 13 cm

Length = Area / breadth

= 650 / 13

= 50 cm

Perimeter = 2 (length + breadth)

= 2 (50 + 13) cm

= 2 (63)

= 126 cm

Option (d) is the correct answer

3.

Solution

Length of the rectangular field = 34 m

Breadth of the rectangular field = 18 m

Circumference = 2 (l + b)

= 2 (34 + 18)

= 2 × 52

= 104 m

Rate of fencing = Rupees 22.50 per m

Total cost = Rupees 22.50 × 104

= Rupees 2340

Option (b) is the correct answer

4.

Solution

Total cost of fencing = Rupees 2400

Rate = Rupees 30 per m

Perimeter of the rectangular field = 2400 / 30

= 80 m

Hence, length + breadth = 80 / 2

= 40 m

Length of field = 24 m

Breadth of field = 40 – 24

= 16 m

Option (b) is the correct answer.

5.

Solution

Area of the rectangular carpet = 120 m^2

Perimeter = 46 m

2 (l + b) = 46

(l + b) = 46 / 2

= 23

And (length × breadth) = 120

$(l - b)^2 = (l + b)^2 - 4lb$

$= (23)^2 - 4 \times 120$

= 529 – 480

= 49

$= (7)^2$

Hence, $l - b = 7$

And $l + b = 23$

By adding, we get $2l = 30$

$l = 30 / 2$

$l = 15$

$b = 23 - 15$

$= 8$

Diagonal $= \sqrt{(l^2 + b^2)}$

$= \sqrt{((15)^2 + (8)^2)}$

$= \sqrt{(225 + 64)}$

$= \sqrt{289}$

$= 17$ m

Option (c) is the correct answer.

6.

Solution

Let x be the width of the rectangle

So, its length will be 3x

Diagonal $= 6\sqrt{10}$ cm

$(3x)^2 + (x)^2 = (6\sqrt{10})^2$

$9x^2 + x^2 = 360$

$10x^2 = 360$

$x^2 = 360 / 10$

$= 36$

$= (6)^2$

$x = 6$ cm

Perimeter $= 2 (l + b)$

$= 2 (3x + x)$

$= 2 (4x)$

$= 8x = 8 \times 6$

$= 48$ cm

Option (a) is the correct answer.

7.

Solution

Ratio in length and perimeter of rectangle = 1: 3

Let length of the rectangle = x

Then perimeter =3x

Breadth = (3x / 2 – x)

= x / 2

ratio in length and breadth = x : x / 2

Hence, ratio is 2: 1

Option (b) is the correct answer

8.

Solution

Given,

Length of the diagonal of a square = 20 cm

Its area = ((diagonal /($\sqrt{2}$)^2)^2

= (20)^2 / 2

= 400 / 2

= 200 cm^2

Option (b) is the correct answer.