EXERCISE 10.1

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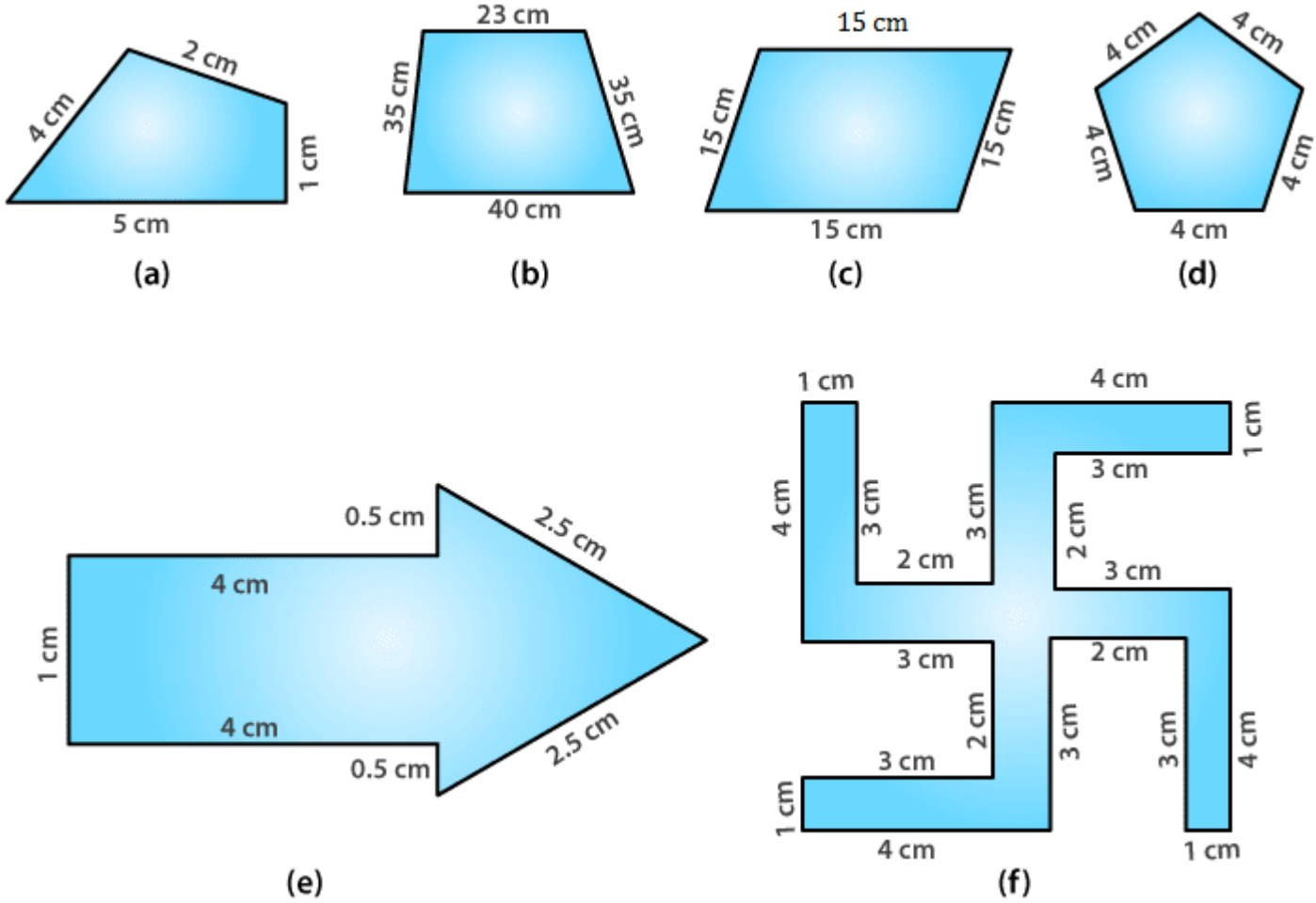
1. Find the perimeter of each of the following figures:



Solutions:

(a) Perimeter = Sum of all the sides

= 1 + 2 + 4 + 5

= 12 cm

(b) Perimeter = Sum of all the sides

= 23 + 35 + 35 + 40

= 133 cm

(c) Perimeter = Sum of all the sides

= 15 + 15 + 15 + 15

= 60 cm

(d) Perimeter = Sum of all the sides

= 4 + 4 + 4 + 4 + 4

=20 cm

(e) Perimeter = Sum of all the sides

= 1 + 4 + 0.5 + 2.5 + 2.5 + 0.5 + 4

= 15 cm

(f) Perimeter = Sum of all the sides

= 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3

= 52 cm

2. The lid of a rectangular box, with sides 40 cm by 10 cm, is sealed all around with tape. What is the length of the tape required?

Solutions:

Length of required tape = Perimeter of rectangle

= 2 (Length + Breadth)

= 2 (40 + 10)

= 2 (50)

= 100 cm

∴ The required length of tape is 100 cm.

3. A table top measures 2 m 25 cm by 1 m 50 cm. What is the perimeter of the tabletop?

Solutions:

Length of tabletop = 2 m 25 cm = 2.25 m

Breadth of tabletop = 1 m 50 cm = 1.50 m

Perimeter of tabletop = 2 (Length + Breadth)

= 2 (2.25 + 1.50)

= 2 (3.75)

= 2 × 3.75

= 7.5 m

∴ The perimeter of the table top is 7.5 m.

4. What is the length of the wooden strip required to frame a photograph of length and breadth, 32 cm and 21 cm, respectively?

Solutions:

The required length of the wooden strip = Perimeter of the photograph

= 2 (Length + Breadth)

= 2 (32 + 21)

= 2 (53)

= 2 × 53

= 106 cm

∴ The required length of the wooden strip is 106 cm.

5. A rectangular piece of land measures 0.7 km by 0.5 km. Each side is to be fenced with 4 rows of wires. What is the length of the wire needed?

Solutions:

Perimeter of the field = 2 (Length + Breadth)

= 2 (0.7 + 0.5)

= 2 (1.2)

= 2 × 1.2

= 2.4 km

Each side is to be fenced with 4 rows = 4 × 2.4

= 9.6 km

∴ The total length of the required wire is 9.6 km.

6. Find the perimeter of each of the following shapes:

(a) A triangle of sides 3 cm, 4 cm and 5 cm

(b) An equilateral triangle of side 9 cm

(c) An isosceles triangle with equal sides of 8 cm each and the third side of 6 cm.

Solutions:

(a) Perimeter of triangle = 3 + 4 + 5

= 12 cm

(b) Perimeter of an equilateral triangle = 3 × side

= 3 × 9

= 27 cm

(c) Perimeter of isosceles triangle = 8 + 8 + 6

= 22 cm

7. Find the perimeter of a triangle with sides measuring 10 cm, 14 cm and 15 cm.

Solutions:

Perimeter of triangle = 10 + 14 + 15

= 39 cm

∴ The perimeter of the triangle is 39 cm.

8. Find the perimeter of a regular hexagon with each side measuring 8 m.

Solutions:

Perimeter of hexagon = 6 × 8

= 48 m

∴ The perimeter of the regular hexagon is 48 m.

9. Find the side of the square whose perimeter is 20 m.

Solutions:

Perimeter of square = 4 × side

20 = 4 × side

Side = 20 / 4

Side = 5 m

∴ The side of the square is 5 m.

10. The perimeter of a regular pentagon is 100 cm. How long is its each side?

Solutions:

The perimeter of the regular pentagon = 100 cm

5 × side = 100 cm

Side = 100 / 5

Side = 20 cm

∴ The side of the pentagon is 20 cm.

11. A piece of string is 30 cm long. What will be the length of each side if the string is used to form:

(a) a square?

(b) an equilateral triangle?

(c) a regular hexagon?

Solutions:

(a) Perimeter of square = 30 cm

4 × side = 30

Side = 30 / 4

Side = 7.5 cm

(b) Perimeter of equilateral triangle = 30 cm

3 × side = 30

Side = 30 / 3

Side = 10 cm

(c) Perimeter of regular hexagon = 30 cm

6 × side = 30

Side = 30 / 6

Side = 5 cm

12. Two sides of a triangle are 12 cm and 14 cm. The perimeter of the triangle is 36 cm. What is its third side?

Solutions:

Let x cm be the third side

Perimeter of triangle = 36 cm

12 + 14 + x = 36

26 + x = 36

x = 36 – 26

x = 10 cm

∴ The third side is 10 cm.

13. Find the cost of fencing a square park of side 250 m at the rate of ₹ 20 per metre.

Solutions:

Side of square = 250 m

Perimeter of square = 4 × side

= 4 × 250

= 1000 m

Cost of fencing = ₹ 20 per m

Cost of fencing for 1000 m = ₹ 20 × 1000

= ₹ 20,000

∴ The cost of fencing the square park is ₹ 20,000.

14. Find the cost of fencing a rectangular park of length 175 cm and breadth 125 m at the rate of ₹ 12 per metre.

Solutions:

Length = 175 cm

Breadth = 125 m

Perimeter of rectangular park = 2 (Length + Breadth)

= 2 (175 + 125)

= 2 (300)

= 2 × 300

= 600 m

Cost of fencing = 12 × 600

= 7200

∴ The cost of fencing is ₹ 7,200.

15. Sweety runs around a square park of side 75 m. Bulbul runs around a rectangular park with a length of 60 m and a breadth of 45 m. Who covers less distance?

Solutions:

Perimeter of square = 4 × side

= 4 × 75

= 300 m

∴ The distance covered by Sweety is 300 m

Perimeter of the rectangular park = 2 (Length + Breadth)

= 2 (60 + 45)

= 2 (105)

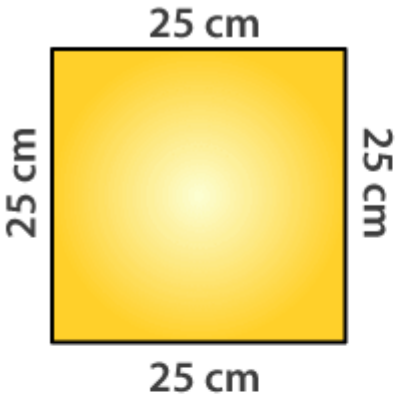
= 2 × 105

= 210 m

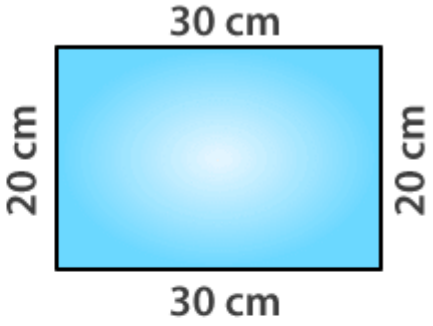
∴ The distance covered by Bulbul is 210 m

Hence, Bulbul covers less distance than Sweety.

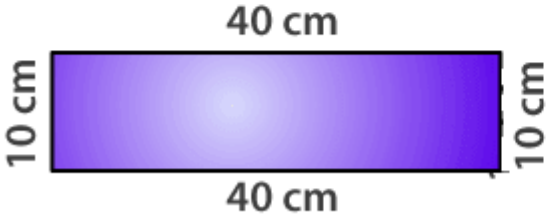
16. What is the perimeter of each of the following figures? What do you infer from the answers?



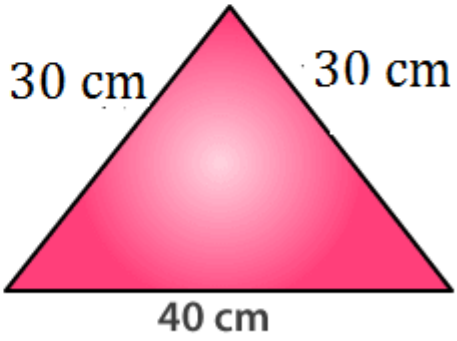
(a)



(c)



(b)



(d)

Solutions:

(a) Perimeter of square = 4 × side

= 4 × 25

= 100 cm

(b) Perimeter of rectangle = 2 (40 + 10)

= 2 × 50

= 100 cm

(c) Perimeter of rectangle = 2 (Length + Breadth)

= 2 (30 + 20)

= 2 (50)

= 2 × 50

= 100 cm

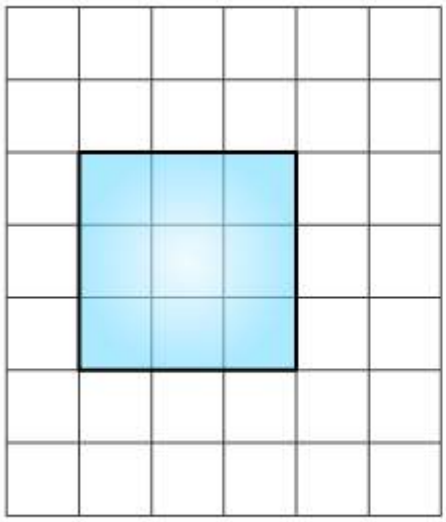
(d) Perimeter of triangle = 30 + 30 + 40

= 100 cm

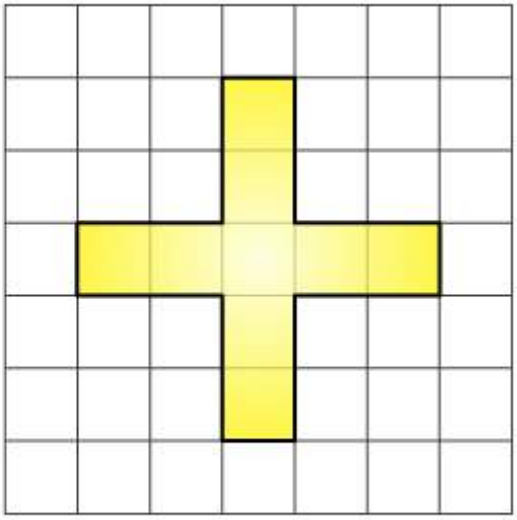
∴ All the figures have the same perimeter.

17. Avneet buys 9 square paving slabs, each with a side of 1 / 2 m. He lays them in the form of a square.

(a) What is the perimeter of his arrangement [fig 10.7(i)]?



(i)



(ii)

(b) Shari does not like his arrangement. She gets him to lay them out like a cross. What is the perimeter of her arrangement [(Fig 10.7 (ii)]?

(c) Which has a greater perimeter?

(d) Avneet wonders if there is a way of getting an even greater perimeter. Can you find a way of doing this? (The paving slabs must meet along complete edges, i.e. they cannot be broken.)

Solutions:

(a) Side of square = 3 × side

= 3 × 1 / 2

= 3 / 2 m

Perimeter of Square = 4 × 3 / 2

= 2 × 3

= 6 m

(b) Perimeter = 0.5 + 1 + 1 + 0.5 + 1 + 1 + 0.5 + 1 + 1 + 0.5 + 1 + 1

= 10 m

(c) The arrangement in the form of a cross has a greater perimeter.

(d) Perimeters greater than 10 m cannot be determined.