# Advance Problem Solving Worksheet A

1. During the lockdown lots of people are buying items online and having their parcels delivered to their homes. The delivery costs for parcels are shown in the table below:

Next Day (urgent delivery)	Minimum price £3.50 up to 1 kg. Add extra £1.50 per extra kg.
3 day (standard delivery)	Minimum price £2.00 up to 1 kg. Add extra £1.20 per extra kg.
7 day (economy delivery)	Minimum price £1.00 up to 1 kg. Add extra £0.50 per extra kg.

Shriaansh has ordered a new dictionary and some stationery from Amazon. The package weights 5kgs.

    a. What is the difference is cost between an urgent delivery and an economy delivery?

    b. Faraz and Zeba have ordered a new encyclopaedia each . The cost for a standard delivery is £10.40. How much does their parcel weigh?

    c. How much extra would it have cost for Faraz and Zeba to receive their parcel with a next day delivery?
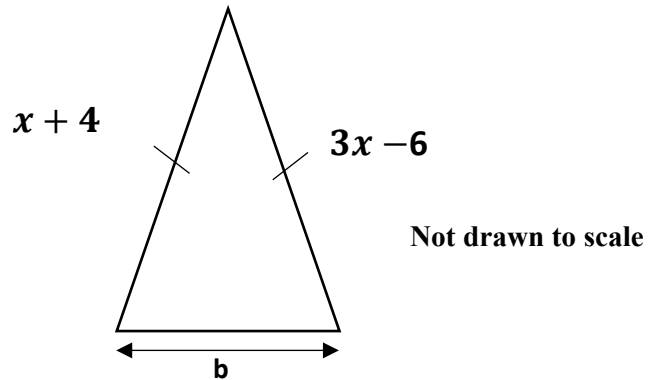
2. What is the area of this trapezium?
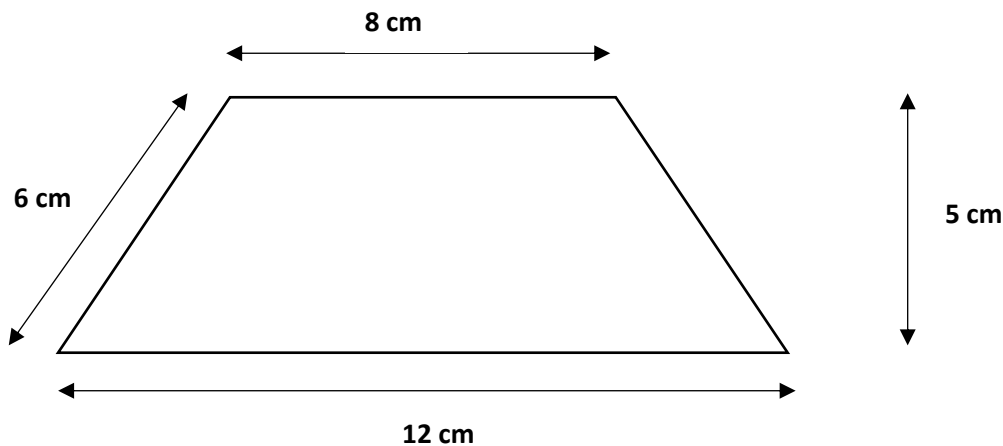
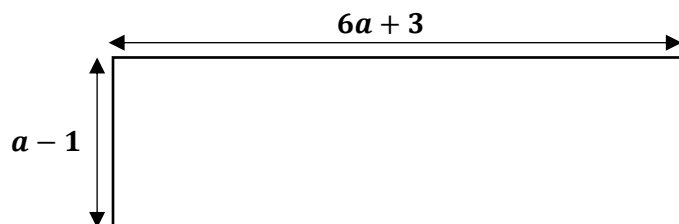**3.** Below is a diagram of Jacob's bedroom. It is NOT drawn to scale:

1.25 m

2.5 m

1.5 m

3.75 m

Not drawn to scale
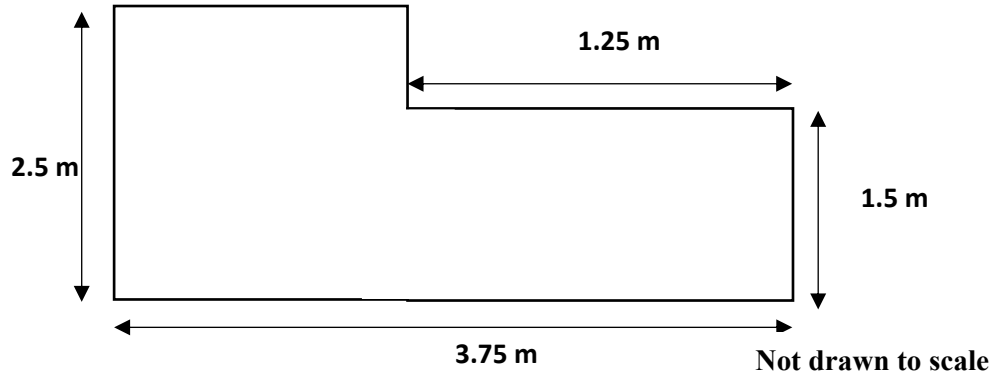
a. What is the perimeter of Jacob's room?

b. What is the area of Jacob's room?

4. Below is an isosceles triangle. Its perimeter measures 23cm. What is the length of side b ?

$x + 4$

$3x - 6$

Not drawn to scale

b

5. The perimeter of this rectangle is 102cm. What is the value of a ?

$6a + 3$

$a - 1$

6. In the bowl 10% of the marbles are red, $\frac{1}{5}$ are blue and 0.25 are yellow. The rest are all green. There are 90 green marbles. How many marbles are there in total in the bowl?

7. Bhoomi is tiling a wall in her bathroom. The wall is 2.4 metres high by 3.5 metres wide. Each tile measures 20cm by 25cm. The tiles come in boxes containing 12 tiles, each box costs £24.50. How much has Bhoomi spent on tiles ?

Answers

1. During the lockdown lots of people are buying items online and having their parcels delivered to their homes. The delivery costs for parcels are shown in the table below:

Next Day (urgent delivery)	Minimum price £3.50 up to 1 kg. Add extra £1.50 per extra kg.
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7 day (economy delivery)	Minimum price £1.00 up to 1 kg. Add extra £0.50 per extra kg.

Shriaansh has ordered a new dictionary and some stationery from Amazon. The package weights 5kgs.

a. What is the difference is cost between an urgent delivery and an economy delivery?

Urgent delivery: £3.50 + (4 x £1.50) = £9.50
Economy delivery: £1.00 + (4 x £0.50) = £3.00

Difference £9.50 - £3.00 = **£6.50**

b. Faraz and Zeba have ordered a new encyclopaedia each . The cost for a standard delivery is £10.40. How much does their parcel weigh?

Standard delivery: £2.00 + (extra kg x £1.20) = £10.40
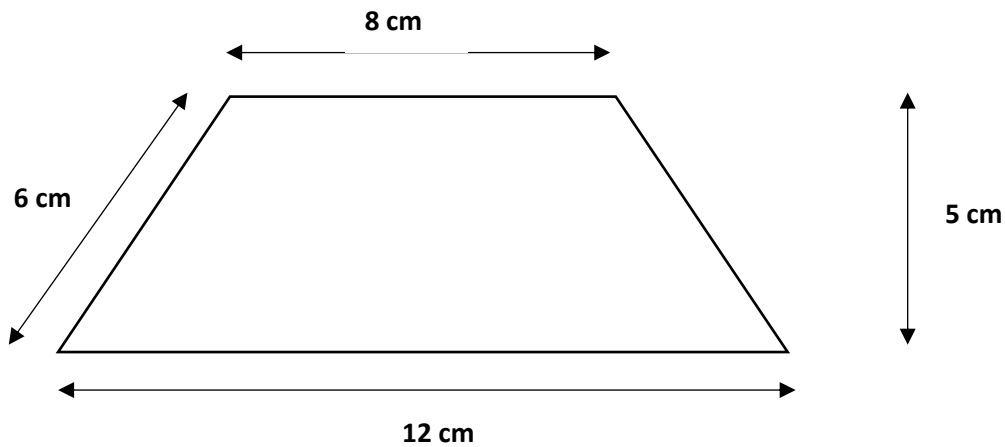£10.40 – £2.00 (for 1st Kg) = £8.40
£8.40 ÷ £1.20 = 7 extra kgs

So parcel was 1kgs + 7kgs extra = **8kgs in total**

c. How much extra would it have cost for Faraz and Zeba to receive their parcel with a next day delivery?

Next day delivery: £3.50 + (7 x £1.5)=£14.00
Difference : £14.00 - £10.40 = **£3.60**

2. What is the area of this trapezium?

8 cm

6 cm

5 cm

12 cm

Area of trapezium=average of parallel side x vertical height

So ((8+12)/2) x 5cm   =   10cm x 5cm = **50 cm²**

3. Below is a diagram of Jacob's bedroom. It is NOT drawn to scale:

2.5m-1.5m=**1m**

3.75m–1.25m=2.5m

1.25 m

2.5 m

1.5 m

3.75 m
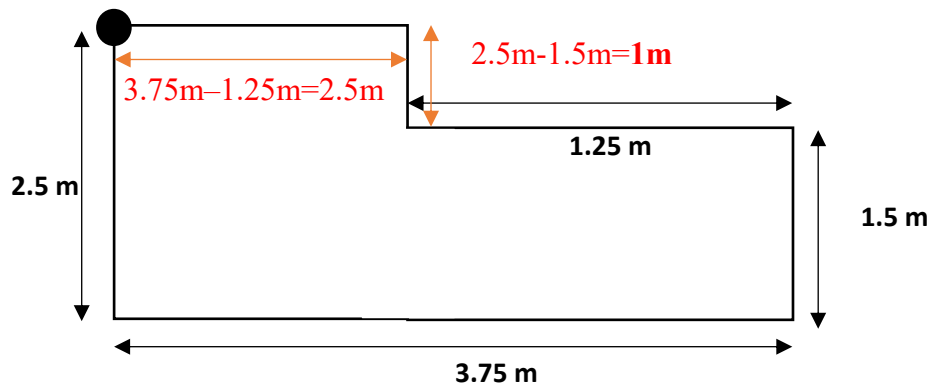
a. What is the perimeter of Jacob's room?

2.5 + 1 + 1.25 + 1.5 + 3.75 + 2.5 = **12 metres**

b. What is the area of Jacob's room?

2.5m x 2.5m = 6.25m²   1.25m x 1.5m = 1.875m²

6.25m² + 1.875m² = 8.125m²

4. Below is an isosceles triangle. Its perimeter measures 23cm. What is the length of side b ?

$x + 4 = 3x - 6$

So $10 = 2x$

And $x = 5cm$

$x + 4$. If x = 5cm

$5 + 4 = 9cm$
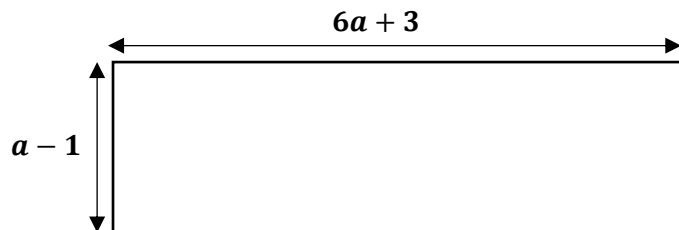
$3x - 6$. If x = 5cm

$15 - 6 = 9cm$

Not drawn to scale

9cm + 9cm + b = 23cm. So b = **5cm**

b

5. The perimeter of this rectangle is 102cm. What is the value of a ?

$6a + 3$

$a - 1$

Not drawn to scale

Perimeter: 2(6a+3) + 2(a-1)

12a + 6 + 2a -2

14a + 4 = 102cm

14a = 98cm

a = 7cm

6. In the bowl 10% of the marbles are red, $\frac{1}{5}$ are blue and 0.25 are yellow. The rest are all green. There are 90 green marbles. How many marbles are there in total in the bowl?

Red = 10% = $\frac{1}{10}$, Blue = $\frac{1}{5}$, Yellow = 0.25 = $\frac{1}{4}$. $\frac{1}{10} + \frac{1}{5} + \frac{1}{4} = \frac{2}{20} + \frac{4}{20} + \frac{5}{20} = \frac{11}{20}$

So $\frac{9}{20}$ = Green = 90. So $\frac{1}{20}$ = 10 and $\frac{20}{20}$ = **200 marbles in total**

7. Bhoomi is tiling a wall in her bathroom. The wall is 2.4 metres high by 3.5 metres wide. Each tile measures 20cm by 25cm. The tiles come in boxes containing 12 tiles, each box costs £24.50. How much has Bhoomi spent on tiles ?

Tile 20cm 25cm
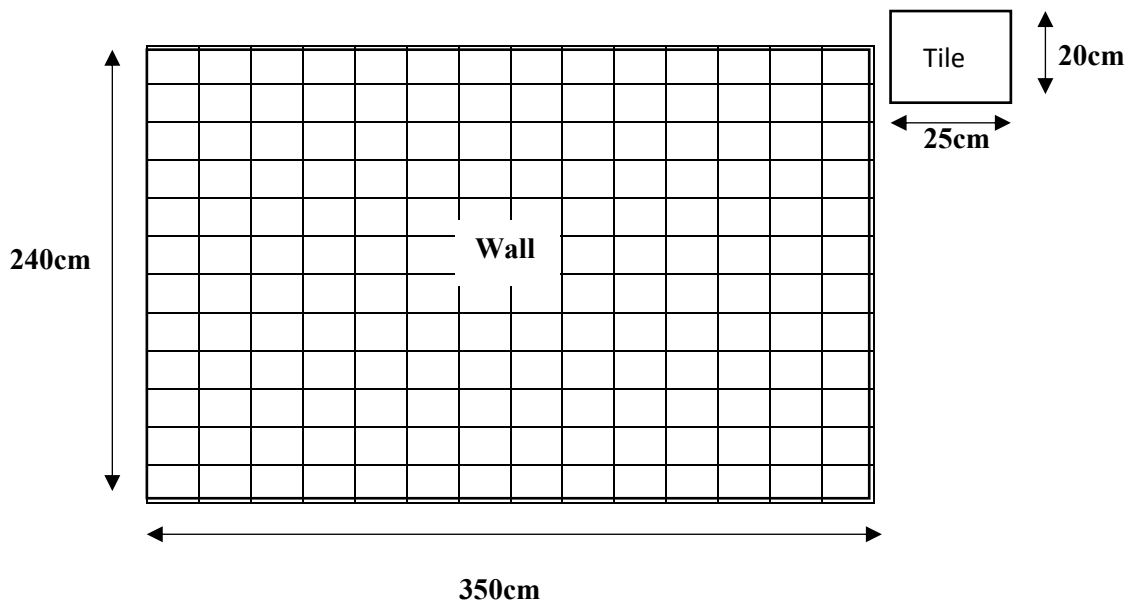
Wall

240cm

350cm

Across the wall: 350cm ÷ 25cm = 14 tiles

Up the wall: 240cm ÷ 20cm = 12 tiles

Total tiles: 14 tiles x 12 tiles = 168 tiles in total.

168 tiles ÷ 12 tiles per box = 14 boxes of tiles

14 box x £24.50 = **£343**