SKILLSHEET

Using a formula to find the area of a common shape

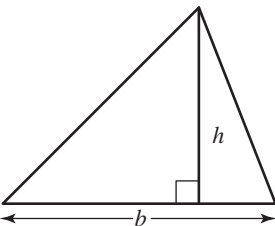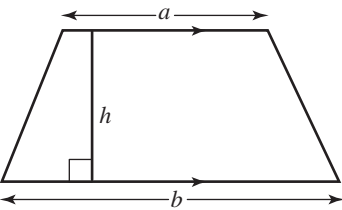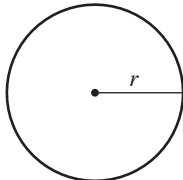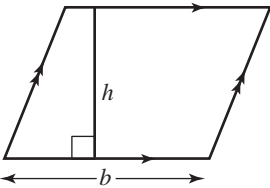The area of many plane figures can be found by using a formula. The table below shows the formula for the area of some common shapes.

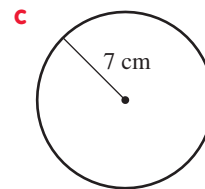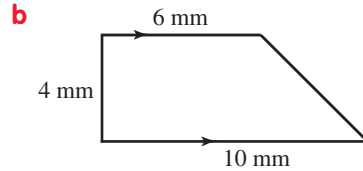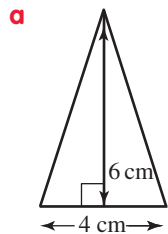| Shape	Formula
1. Square	$A = l^2$, where l is a side length
2. Rectangle	$A = l \times w$, where l is the length and w is the width
3. Triangle	$A = \frac{1}{2} \times b \times h$, where b is the base length and h is the height
4. Trapezium	$A = \frac{1}{2}(a + b) \times h$, where a and b are the lengths of the parallel sides and h is the height
5. Circle	$A = \pi r^2$, where r is the radius
6. Parallelogram	$A = b \times h$, where b is the base length and h is the height

(continued)

WORKED EXAMPLE

Find the area of each of the following plane figures.

a

b   6 mm

4 mm

10 mm

c

7 cm

THINK

WRITE

a **1** The shown shape is a triangle. Write the formula for the area of a triangle.

a $A = \frac{1}{2} \times b \times h$

2 Identify the values of the pronumerals.

$b = 4, h = 6$

3 Substitute the values of b and h into the formula and evaluate.

$A = \frac{1}{2} \times 4 \times 6$

$= 12 \text{ cm}^2$

b **1** The shown shape is a trapezium. Write the formula for the area of this shape.

b $A = \frac{1}{2}(a \times b) \times h$

2 Identify the values of the pronumerals.

$a = 6, b = 10, h = 4$

3 Substitute the values of the pronumerals into the formula and evaluate.

$A = \frac{1}{2}(6 \times 10) \times 4$

$= \frac{1}{2} \times 16 \times 4$

$= 32 \text{ mm}^2$

c **1** The shown shape is a circle. Write the appropriate area formula.

c $A = \pi r^2$

2 Identify the value of r.

$r = 7$

3 Substitute the values of π and r into the formula and evaluate.

$A = \pi \times (7)^2$

$= \pi \times 49$

$= 153.94 \text{ cm}^2$

(to 2 decimal places)

Try these

Find the area of each of the following plane figures.

1

6 cm

$A = l^2$

$= 6^2$

$= \text{...}$

2   14 cm

8 cm

$A = l \times w$

$= \text{...}$

$= \text{...}$

(continued)

3

4.5 cm

←5 cm→

....
....
....

4

7 cm

9.2 cm

....
....
....

5

12 cm

6.4 cm

9 cm

....
....
....

6

9 mm

....
....
....

7

12.4 cm

....
....
....

8

7 m

11 m

....
....
....

9

8 mm

5.8 mm

11 mm

....
....
....

10

8.3 cm

1 cm

....
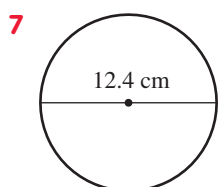..
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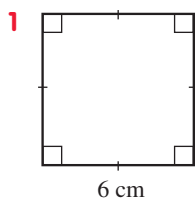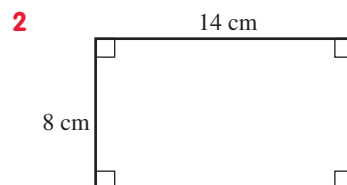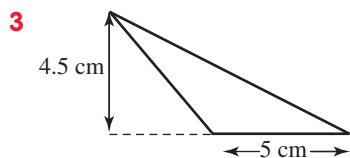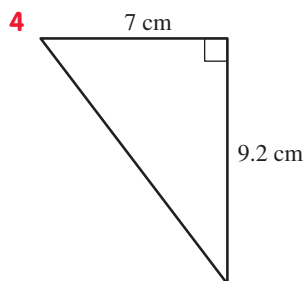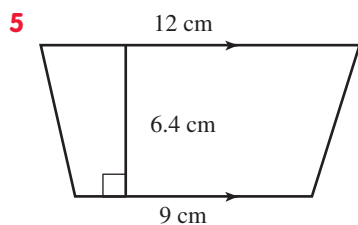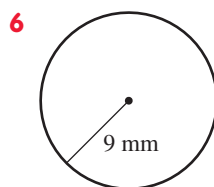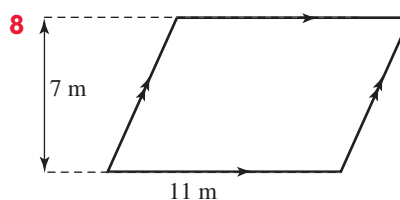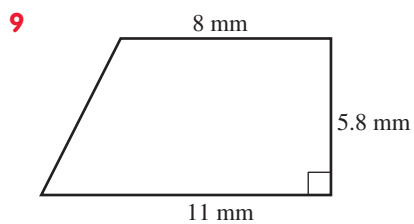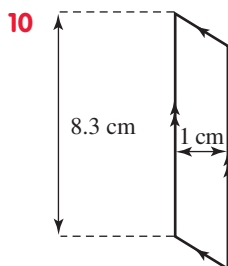
SKILLSHEET — ANSWERS

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1 $36\,\text{cm}^2$ **2** $112\,\text{cm}^2$

3 $11.25\,\text{cm}^2$ **4** $32.2\,\text{cm}^2$

5 $67.2\,\text{cm}^2$ **6** $254.47\,\text{mm}^2$

7 $120.76\,\text{cm}^2$ **8** $77\,\text{m}^2$

9 $55.1\,\text{mm}^2$ **10** $8.3\,\text{cm}^2$