Name _____

Date _____ Pd _____

AREA OF RECTANGLES AND PARALLELOGRAMS

AREA OF RECTANGLES

- Area is the _____ _____ of a two-dimensional figure. We can think of it as the square units that a shape covers.

- Use the formula _____, where "b" is the length of the _____, and "h" is the height of the rectangle.

- Area is measured in _____ units:

Ex: inches • inches = ____   feet • feet = ____   meters • meters = ____

Practice using the formula for the area of a rectangle to solve the problems below.

1.
12.7 cm

5 cm

Formula: _____

Plug in Values: _____

Area: _____

2.
$2\frac{1}{2}$ ft

$1\frac{2}{5}$ ft

Formula: _____

Plug in Values: _____

Area: _____

3. Two walls of a room are being painted. Each wall measures 16 feet by $8\frac{1}{2}$ feet. How many square feet will be painted?
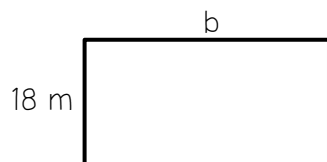
WRITING FORMULAS

- Formulas can be manipulated to solve for missing information.

Ex: A = bh can be written as _____ or _____ .

Use your understanding of the area of rectangles to answer the question below.

4. The area of the rectangle is 162 m^2. What is the length of the base, b?

b

18 m

Formula: _____

Plug in Values: _____

Value of b: _____

Solve each of the problems below.

5. A rectangular canvas covers 225 square inches on a wall. If the canvas has a height of 18 inches, then what is the base?

6. Students were asked to write a formula that could be used to find the height of a rectangle with a base of 12 cm and an area of 60 cm². Circle the names of those who did this correctly.

ILYA	CHLOE	BEN	SHAWN	KATE
$60 = 12(12)$	$12 = 60(h)$	$60 = 12(h)$	$h = \dfrac{12}{60}$	$h = \dfrac{60}{12}$

AREA OF PARALLELOGRAMS

- The dimensions of a parallelogram are also referred to as the base and height.

- Use the formula _____, where "b" is the length of the base and "h" is the height of the parallelogram, which makes a _____ with the base.
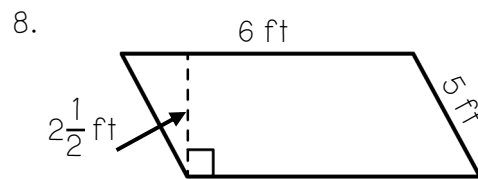
Practice using the formula for the area of a parallelogram to solve the problems below.

7.   12.2 cm
   8 cm   10 cm

Formula: _____

Plug in Values: _____

Area: _____

8.   6 ft
   $2\frac{1}{2}$ ft   5 ft
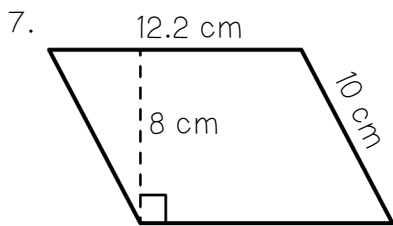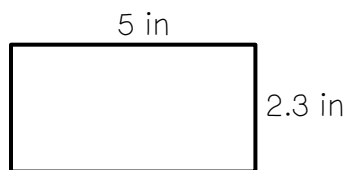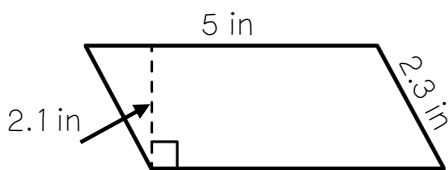
Formula: _____

Plug in Values: _____

Area: _____

9. Karlie was given the rectangle and parallelogram pictured below on her math test. She said that they both had an area of 11.5 in² because they both had the same base and the same height. Is she correct? If not, explain why and find the correct area.

   5 in
   2.1 in   2.3 in

   5 in
   2.3 in

Summarize today's lesson:

Name _____

Date _____ Pd _____

AREA OF RECTANGLES AND PARALLELOGRAMS

AREA OF RECTANGLES

- Area is the ___surface___ ___measurement___ of a two-dimensional figure. We can think of it as the square units that a shape covers.

- Use the formula ___$A = bh$___, where "b" is the length of the ___base___, and "h" is the height of the rectangle.

- Area is measured in ___square___ units:

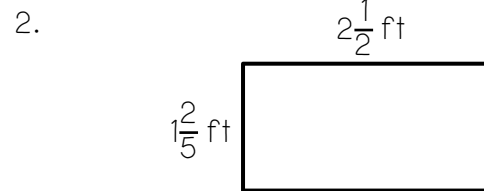Ex: inches • inches = ___in^2___   feet • feet = ___ft^2___   meters • meters = ___m^2___

Practice using the formula for the area of a rectangle to solve the problems below.

1.

12.7 cm

5 cm
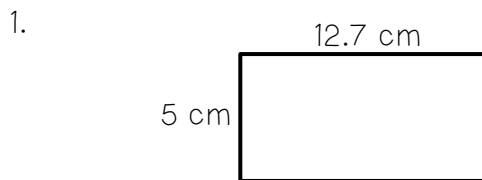
Formula: ___$A = bh$___

Plug in Values: ___$A = 12.7(5)$___

Area: ___63.5 cm^2___

2.

$2\frac{1}{2}$ ft

$1\frac{2}{5}$ ft

Formula: ___$A = bh$___

Plug in Values: ___$A = 2\frac{1}{2}(1\frac{2}{5})$___

Area: ___$3\frac{1}{2} \text{ ft}^2$___

3. Two walls of a room are being painted. Each wall measures 16 feet by $8\frac{1}{2}$ feet. How many square feet will be painted?
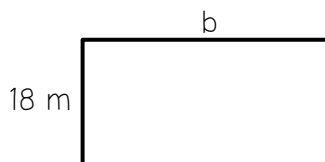
272 ft^2

WRITING FORMULAS

- Formulas can be manipulated to solve for missing information.

Ex: $A = bh$ can be written as ___$b = \frac{A}{h}$___ or ___$h = \frac{A}{b}$___ .

Use your understanding of the area of rectangles to answer the question below.

4. The area of the rectangle is 162 m^2. What is the length of the base, b?

b

18 m

Formula: ___$A = bh$___

Plug in Values: ___$162 = b(18)$___

Value of b: ___9 m___

Solve each of the problems below.

5. A rectangular canvas covers 225 square inches on a wall. If the canvas has a height of 18 inches, then what is the base?

$A = bh$
$225 = b(18)$
$b = 12.5$ in

6. Students were asked to write a formula that could be used to find the height of a rectangle with a base of 12 cm and an area of 60 cm². Circle the names of those who did this correctly.

ILYA	CHLOE	(BEN)	SHAWN	(KATE)
$60 = 12(12)$	$12 = 60(h)$	$60 = 12(h)$	$h = \frac{12}{60}$	$h = \frac{60}{12}$

AREA OF PARALLELOGRAMS

- The dimensions of a parallelogram are also referred to as the base and height.

- Use the formula ___$A = bh$___, where "b" is the length of the base and "h" is the height of the parallelogram, which makes a ___$90°$ angle___ with the base.

Practice using the formula for the area of a parallelogram to solve the problems below.

7.
12.2 cm
8 cm
10 cm
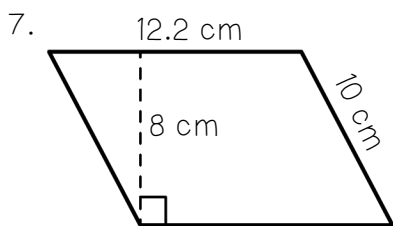
Formula: _____$A = bh$_____

Plug in Values: _____$A = 12.2(8)$_____

Area: _____97.6 cm²_____

8.
6 ft
$2\frac{1}{2}$ ft
5 ft
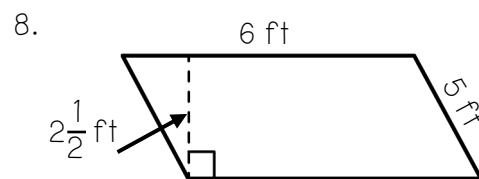
Formula: _____$A = bh$_____

Plug in Values: _____$A = 6(2\frac{1}{2})$_____

Area: _____15 ft²_____

9. Karlie was given the rectangle and parallelogram pictured below on her math test. She said that they both had an area of 11.5 in² because they both had the same base and the same height. Is she correct? If not, explain why and find the correct area.
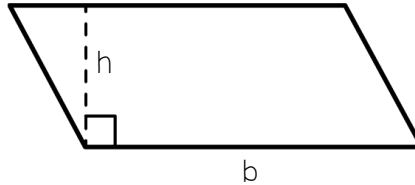
5 in
2.1 in
2.3 in

5 in
2.3 in
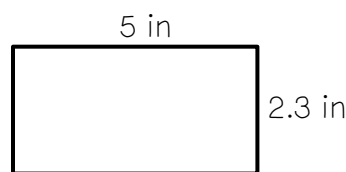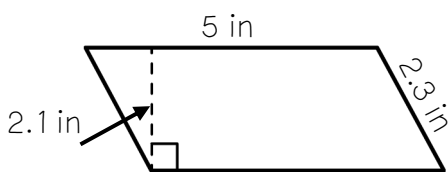
No. The height of the parallelogram is 2.1 in and the area is 10.5 in².

Summarize today's lesson:

Name _____

Date _____ Pd _____

AREA OF TRIANGLES AND TRAPEZOIDS

AREA OF TRIANGLES
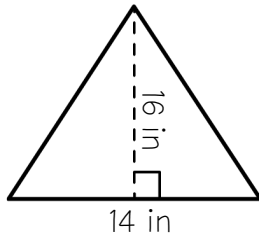
- Two triangles are formed when a _____ is cut in _____.

- Therefore, the formula for the area of a triangle is_____.

- The height of the triangle will form a _____ angle with the base of the triangle.

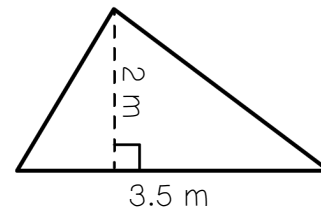Label the base and the height of the triangle. Use the formula to find the area of each triangle.

1.

16 in

14 in

Formula: _____

Plug in Values: _____

Area: _____

2.

2 m

3.5 m

Formula: _____

Plug in Values: _____

Area: _____

AREA OF TRAPEZOIDS

- A trapezoid is one or two _____ and a _____ combined.

- To find the area, use the formula _____, where:

   - b_1 is the _____

   - b_2 is the _____

   - h is the _____ of the trapezoid.

3. Use a formula to determine the area of the shape below.

7in

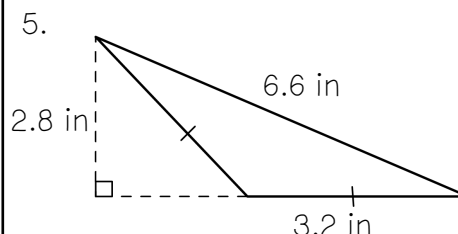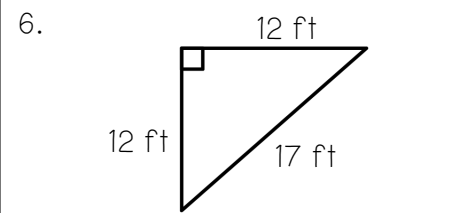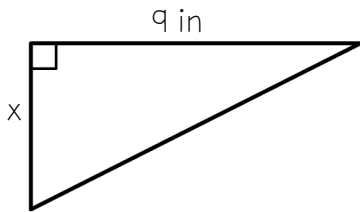4 in

5 in

12 in
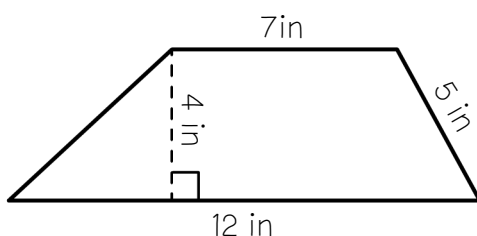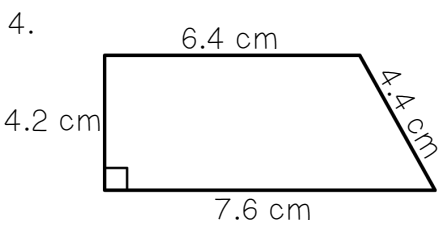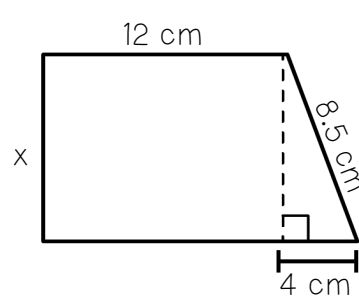
Formula: _____

Plug in Values: _____

Area: _____

Use your understanding of area to answer questions 4-9.

4.

6.4 cm

4.2 cm

4.4 cm

7.6 cm

Formula: _____

Plug in Values: _____

Area: _____

5.

6.6 in

2.8 in

3.2 in

Formula: _____

Plug in Values: _____

Area: _____

6.

12 ft
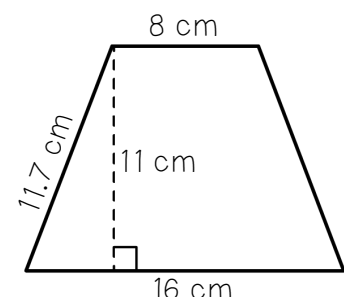
12 ft

17 ft

Formula: _____

Plug in Values: _____

Area: _____

7. A flag banner was created out of scrapbook paper. Eight flags were used to create the banner which has a total area of 108 in^2. What is the height of each flag?

9 in

x

8. The area of the trapezoid below is 105 cm^2. What is the height?

12 cm

x

8.5 cm

4 cm

9. Small tiles are used to create a mosaic art piece with a total area of 1,584 cm^2. Use the trapezoid below to determine whether each statement is true or false. If false, correct the statement in the space below.

_____ a. The area of one tile can be found using $\frac{1}{2}(16 + 8)(11.7)$.

_____ b. The area of one tile is 132 cm^2.

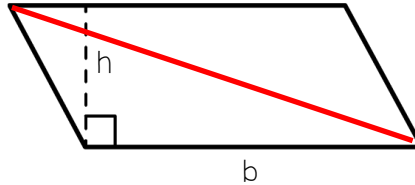_____ c. In order to create the mosaic art piece, 15 tiles were used.

8 cm

11.7 cm

11 cm

16 cm

AREA OF TRIANGLES AND TRAPEZOIDS
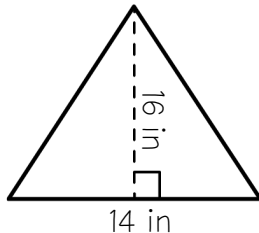
AREA OF TRIANGLES

- Two triangles are formed when a ___parallelogram___ is cut in ___half___.

- Therefore, the formula for the area of a triangle is ___$A = \frac{1}{2}bh$___.

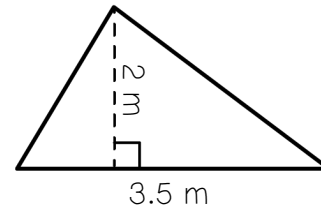- The height of the triangle will form a ___right___ angle with the base of the triangle.

Label the base and the height of the triangle. Use the formula to find the area of each triangle.

1.

16 in
14 in

Formula: ___$A = \frac{1}{2}bh$___

Plug in Values: ___$A = \frac{1}{2}(14)(16)$___

Area: ___112 in^2___

2.

2 m
3.5 m

Formula: ___$A = \frac{1}{2}bh$___

Plug in Values: ___$A = \frac{1}{2}(3.5)(2)$___
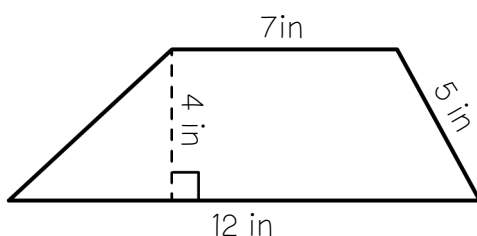
Area: ___3.5 m^2___

AREA OF TRAPEZOIDS

- A trapezoid is one or two ___triangles___ and a ___rectangle___ combined.

- To find the area, use the formula ___$A = \frac{1}{2}(b_1 + b_2)h$___, where:

  - b_1 is the ___the length of the first base___
  - b_2 is the ___the length of the second base___
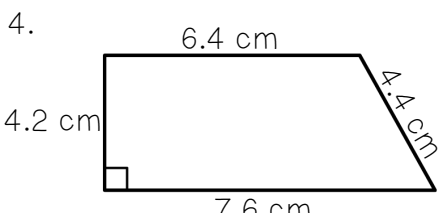 - h is the ___height___ of the trapezoid.

b_1
h
b_2

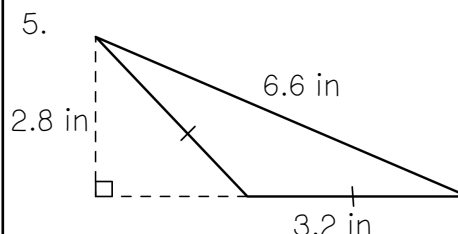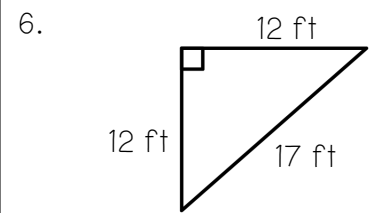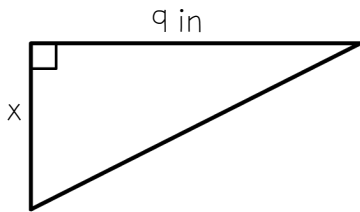**3.** Use a formula to determine the area of the shape below.

7in
4 in
5 in
12 in
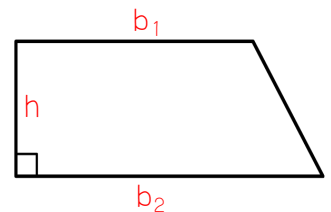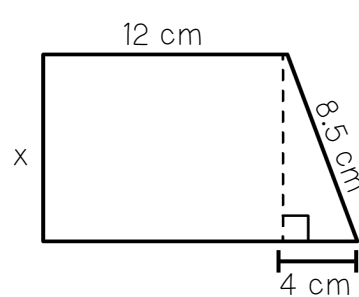
Formula: ___$A = \frac{1}{2}(b_1 + b_2)h$___

Plug in Values: ___$A = \frac{1}{2}(12 + 7)(4)$___

Area: ___38 in^2___

Use your understanding of area to answer questions 4-9.

4.

6.4 cm
4.2 cm
4.4 cm
7.6 cm

Formula: $A = \frac{1}{2}(b_1 + b_2)h$

Plug in Values: $\frac{1}{2}(7.6 + 6.4)(4.2)$

Area: __29.4 cm²__

5.

6.6 in
2.8 in
3.2 in

Formula: $A = \frac{1}{2}bh$

Plug in Values: $\frac{1}{2}(3.2)(2.8)$

Area: __4.48 in²__

6.

12 ft
12 ft
17 ft

Formula: $A = \frac{1}{2}bh$

Plug in Values: $\frac{1}{2}(12)(12)$

Area: __72 ft²__

7. A flag banner was created out of scrapbook paper. Eight flags were used to create the banner which has a total area of 108 in². What is the height of each flag?

9 in
x

3 in

8. The area of the trapezoid below is 105 cm². What is the height?

12 cm
x
8.5 cm
4 cm

7.5 cm

9. Small tiles are used to create a mosaic art piece with a total area of 1,584 cm². Use the trapezoid below to determine whether each statement is true or false. If false, correct the statement in the space below.
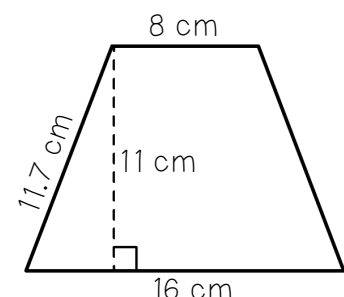
8 cm
11.7 cm
11 cm
16 cm

__False__ a. The area of one tile can be found using $\frac{1}{2}(16 + 8)(11.7)$.

The area can be found using $\frac{1}{2}(16 + 8)(11)$.

__True__ b. The area of one tile is 132 cm².

__False__ c. In order to create the mosaic art piece, 15 tiles were used.
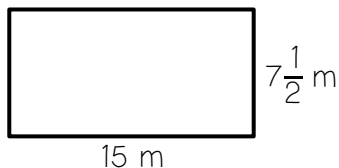
12 tiles were used to make the art piece.

Name _____

Date _____ Pd _____

AREA OF RECTANGLES AND PARALLELOGRAMS

Solve the problems below. Be sure to show your work.
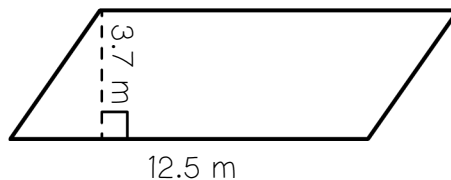
---

1. Determine the area of the rectangle.

$7\frac{1}{2}$ m

15 m

Formula: _____

Plug in Values: _____

Area: _____

---

2. Determine the area of the parallelogram.

3.7 m

12.5 m
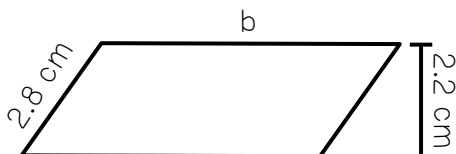
Formula: _____

Plug in Values: _____

Area: _____

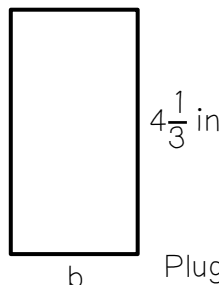**3.** The area of the parallelogram is 17.6 cm^2. What is the length of the base?

b

2.8 cm

2.2 cm

Formula: _____

Plug in Values: _____

Base: _____

---

4. The area of the rectangle is $10\frac{5}{6}$ in^2. What is the length of the base?

$4\frac{1}{3}$ in

b

Formula: _____

Plug in Values: _____

Base: _____

For 5-7, use your understanding of area to solve the application problems below.

---

5. How many square feet of wallpaper will be used to cover a wall measuring 9 feet by $18\frac{1}{4}$ feet?

---

6. The parallelogram-shaped area below is being covered with carpet. The carpet is priced at $2.80 per square meter. How much will it cost to carpet the area?
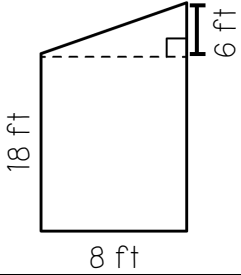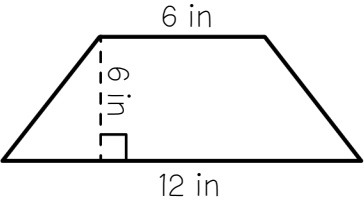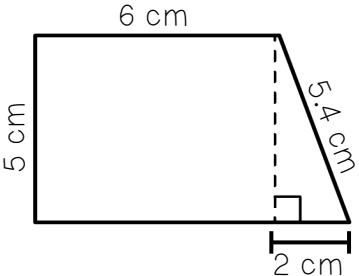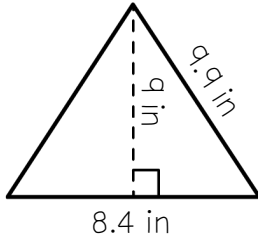
3.1 m

8.1 m

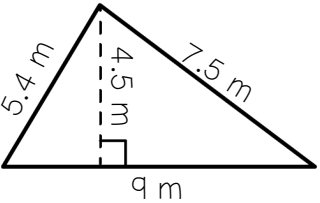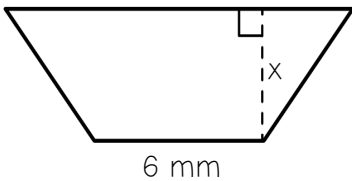**7.** Jordan is helping his dad build a doghouse. The floor is rectangle-shaped with a width of 5 feet and an area of 36.25 ft^2. What is the length of the rectangular floor?

Name _____

Date _____ Pd _____

AREA OF TRIANGLES AND TRAPEZOIDS

Match each correct answer to a letter and complete the riddle below. Not all choices will be used.

1 What is the area of a right triangle with a height of 8.9 cm and a base of 14.3 cm?

5 Find the area of the trapezoid at the right by decomposing it into familiar shapes.

6 ft

18 ft

8 ft

2 What is the area of the trapezoid?

6 in

6 in

12 in

6 A triangle has an area of 38.4 cm². The height of the triangle is 12.8 centimeters. What is the length of the base of the triangle?

3 Find the area of the trapezoid at the right.

6 cm

5 cm

5.4 cm

2 cm

7 What is the area of the triangle?

9.9 in

9 in

8.4 in

4 Find the area of the triangle below.

5.4 m

4.5 m

7.5 m

9 m

8 A trapezoid has an area of 35 mm². What is the height of the trapezoid?

8 mm

x

6 mm

L: 36	T: 5	F: 12.15	H: 56	A: 37.8	I: 127.5
R: 50.4	C: 12	E: 20.25	S: 35	G: 108	M: 168
H: 63.64	E: 3	W: 35.4	T: 6	A: 54	N: 24

WHAT IS BLACK AND WHITE AND HAS LOTS OF PROBLEMS?

___ ___ ___ ___ ___ ___ ___ ___ ___
2   5   7   6   1   8   4   3   6