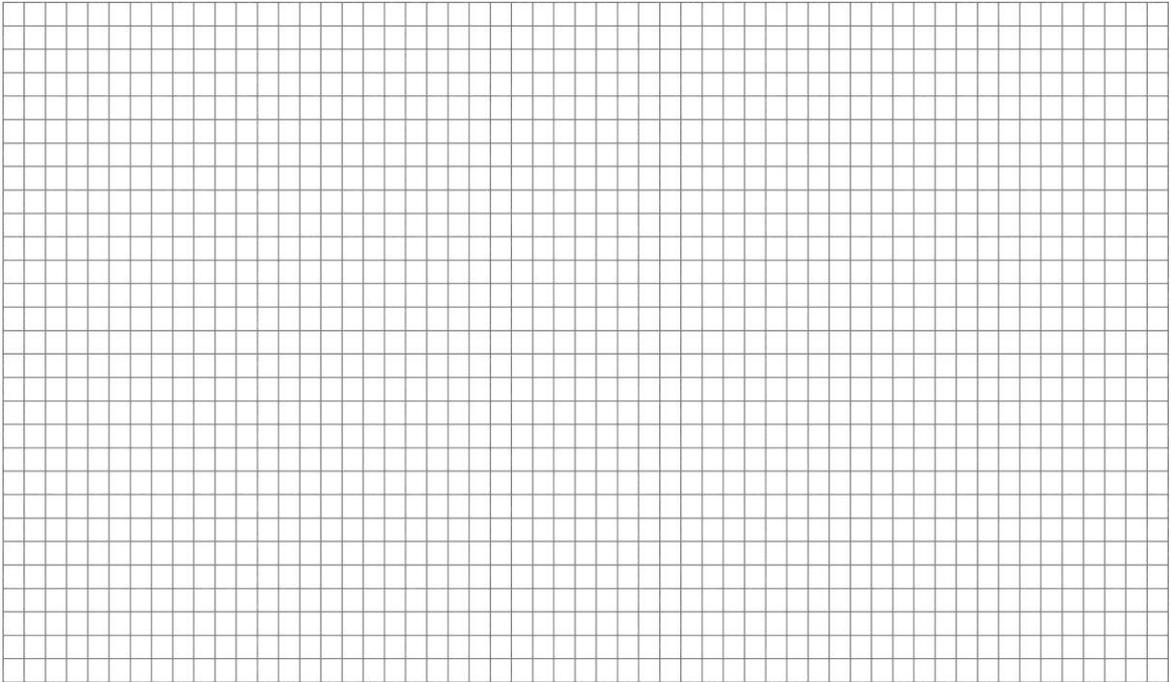


## Step-by-Step 1

### Lesson 1.1, Question 18

**Step 1** Use the grid to draw as many squares as you can with area between 50 square units and 200 square units, and side lengths that are a whole number of units. Label each square with its side length and area.



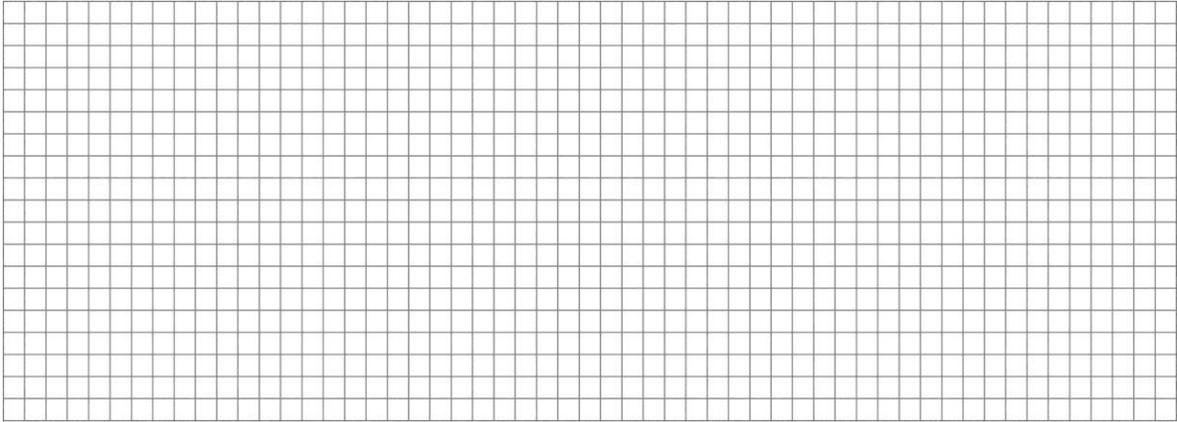
**Step 2** List the side lengths of the squares you drew in *Step 1* in ascending order. \_\_\_\_\_

What do you notice?

**Step 3** What are the areas of the squares you drew in *Step 1*? \_\_\_\_\_

What are the perfect squares between 50 and 200? \_\_\_\_\_

How do you know?

**Step-by-Step 2****Lesson 1.2, Question 16**

**Step 1** Use the grid to draw a square with area 169 square units.

Label it with its side length and area.

You may need to use guess and test.

**Step 2** What is the side length of the square with area 169 square units? \_\_\_\_\_

So,  $\sqrt{169} =$  \_\_\_\_\_

**Step 3** Use the grid to draw a square with area 36 square units.

Label it with its side length and area.

**Step 4** What is the side length of the square with area 36 square units? \_\_\_\_\_

So,  $\sqrt{36} =$  \_\_\_\_\_

**Step 5** Use the grid to draw a square with area 196 square units.

Label it with its side length and area.

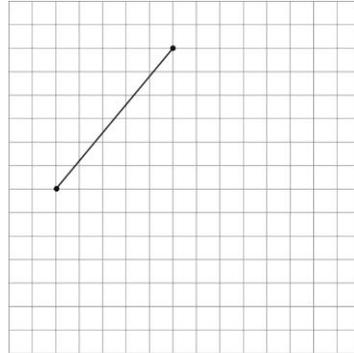
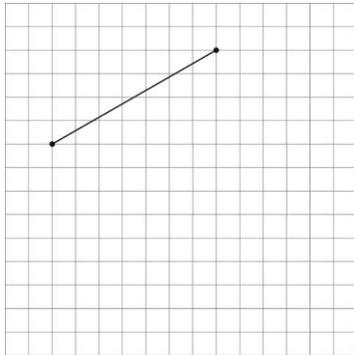
**Step 6** What is the side length of the square with area 196 square units? \_\_\_\_\_

So,  $\sqrt{196} =$  \_\_\_\_\_

**Master 1.17**

**Step-by-Step 3**

**Lesson 1.3, Question 11**



- Step 1** Use a straightedge and protractor to construct a square on the first line segment.
- Step 2** Draw an enclosing square around the tilted square.  
Colour or shade the congruent triangles formed by the enclosing square.
- Step 3** Find the area of the enclosing square. Area = \_\_\_\_\_
- Step 4** Find the area of each triangle. Area = \_\_\_\_\_  
Area of all 4 triangles =  $4 \times$  \_\_\_\_\_  
= \_\_\_\_\_
- Step 5** Find the area of the tilted square.  
Area of tilted square = Area of enclosing square – Area of all 4 triangles  
= \_\_\_\_\_ – \_\_\_\_\_  
= \_\_\_\_\_
- Step 6** Repeat *Steps 1–5* for the second line segment.
- Step 7** Which tilted square has lesser area? \_\_\_\_\_  
Which square has the shorter side length? \_\_\_\_\_  
Which line segment is shorter? \_\_\_\_\_  
Explain how you know.

## Step-by-Step 4

### Lesson 1.4, Question 15

**Step 1** The canvas is in the shape of a square.

The area of the canvas is: \_\_\_\_\_ m<sup>2</sup>

The side length of the canvas is:  $\sqrt{\text{_____}}$  m

**Step 2** Estimate to find the two perfect squares closest to 5.

\_\_\_\_\_ < 5 < \_\_\_\_\_

So, \_\_\_\_\_ <  $\sqrt{5}$  < \_\_\_\_\_

**Step 3** With a calculator, use guess and test to refine your estimate of  $\sqrt{5}$ .

First try estimates to one decimal place.

When you are close, try estimates to two decimal places.

Try \_\_\_\_\_: \_\_\_\_\_<sup>2</sup> = \_\_\_\_\_ Close to 5?

**Step 4** The dimensions of the square frame for the canvas to two decimal places is:

\_\_\_\_\_ m by \_\_\_\_\_ m

**Step 5** The distance around a square is its perimeter.

What is the perimeter of the frame? \_\_\_\_\_

**Step 6** Should the student purchase 5 m or 10 m of framing? Explain.

**Step-by-Step 5****Lesson 1.5, Question 12**

**Step 1** The hypotenuse of the right triangle is: \_\_\_\_\_ units  
So, the area of the square on the hypotenuse is: \_\_\_\_\_ square units

**Step 2** Complete this sentence about the Pythagorean Theorem.

The area of the square on the hypotenuse is equal to \_\_\_\_\_

So, the sum of the areas of the squares on the legs of the triangle is:

\_\_\_\_\_ square units

**Step 3** Find two whole numbers whose sum is equal to your answer in *Step 2*:

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

So, the areas of the squares on the legs of the triangle could be:

\_\_\_\_\_ square units and \_\_\_\_\_ square units

The side lengths of the squares on the legs of the triangle could be

\_\_\_\_\_ units and \_\_\_\_\_ units

**Step 4** Sketch the triangle. Label the side lengths.

**Step 5** Repeat *Steps 3* and *4* using two different whole numbers.

**Step 6** How many different answers can you find? Sketch each triangle.

## Step-by-Step 6

### Lesson 1.6, Question 10

- Step 1** The longest side of the triangle has length: \_\_\_\_\_ cm  
 The other two sides have length: \_\_\_\_\_ cm and \_\_\_\_\_ cm
- Step 2** Find the area of the square on the longest side of the triangle.  
 Area = \_\_\_\_\_
- Step 3** Find the area of the squares on the shorter sides of the triangle.  
 Area of square on one side = \_\_\_\_\_  
 Area of square on the other side = \_\_\_\_\_  
 Sum of the areas of the squares on the shorter sides = \_\_\_\_\_
- Step 4** The longest side of a right triangle is called \_\_\_\_\_  
 The shorter sides of a right triangle are called \_\_\_\_\_  
 Use the Pythagorean Theorem to complete this sentence.  
 The area of the square on the hypotenuse of a right triangle is equal to \_\_\_\_\_  
 \_\_\_\_\_
- Step 5** Is the Pythagorean Theorem true for this triangle? \_\_\_\_\_  
 Is the triangle a right triangle? Explain.

## Master 1.21

**Step-by-Step 7****Lesson 1.7, Question 14****Step 1** Join points A and B.

Draw a right triangle that has segment AB as its hypotenuse.

What are the lengths of the legs?

\_\_\_\_\_ cm and \_\_\_\_\_ cm

**Step 2** Use the Pythagorean Theorem to find the length of AB.

$$h^2 = a^2 + b^2$$

Substitute:  $a =$  \_\_\_\_\_ and  $b =$  \_\_\_\_\_

What is the length of AB? \_\_\_\_\_ cm

**Step 3** Join points A and C.

Draw a right triangle that has segment AC as its hypotenuse.

What are the lengths of the legs? \_\_\_\_\_ cm and \_\_\_\_\_ cm

Use the Pythagorean Theorem to find the length of AC.

What is the length of AC? \_\_\_\_\_ cm

Is C the same distance from A as B is? \_\_\_\_\_

**Step 4** Repeat *Steps 1* and *2* for points A and D, A and E, A and F, A and H, A and I, and A and J.**Step 5** Join points A and G.

What is the length of AG? \_\_\_\_\_ cm

Is G the same distance from A as B is? \_\_\_\_\_

**Step 6** Which points are the same distance from A as B is? \_\_\_\_\_

