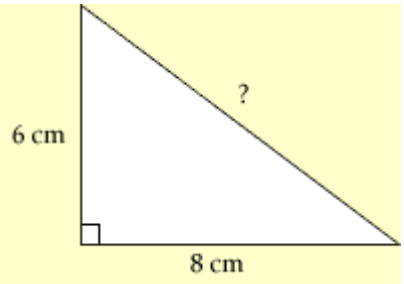
Review Exercise Set 28

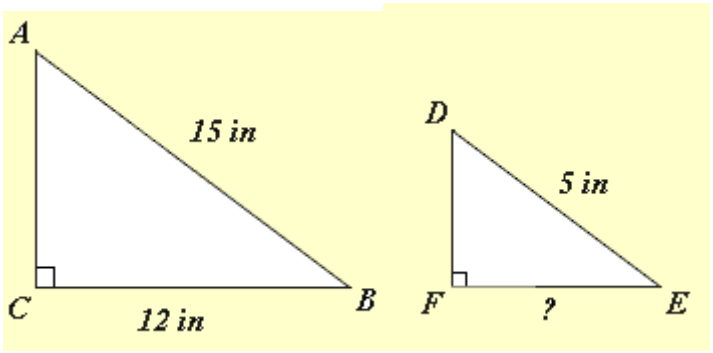
Exercise 1: Find the length of the unknown side of the given triangle. Round answer to the nearest tenth.



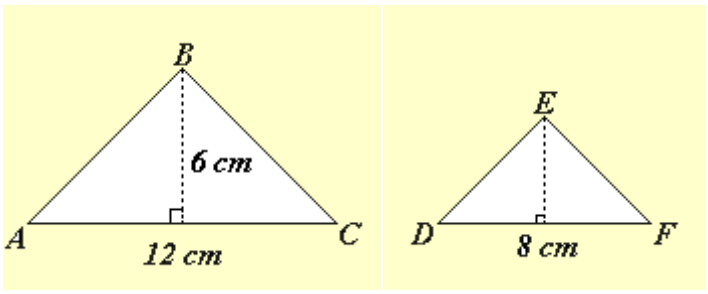
Exercise 2: Solve. Round answer to the nearest tenth.

If you started at San Antonio College and traveled east for 10 miles and then traveled south for 13 miles, how far away are you from San Antonio College?

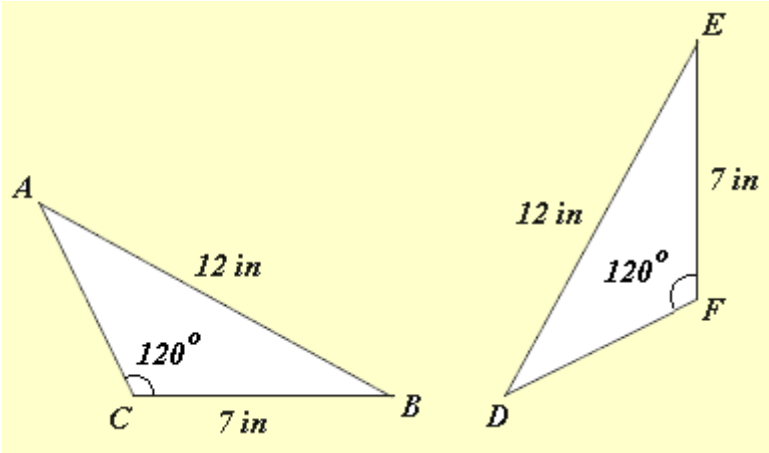
Exercise 3: Given that the two triangles below are similar, find the length of the side FE. Round answer to the nearest tenth.



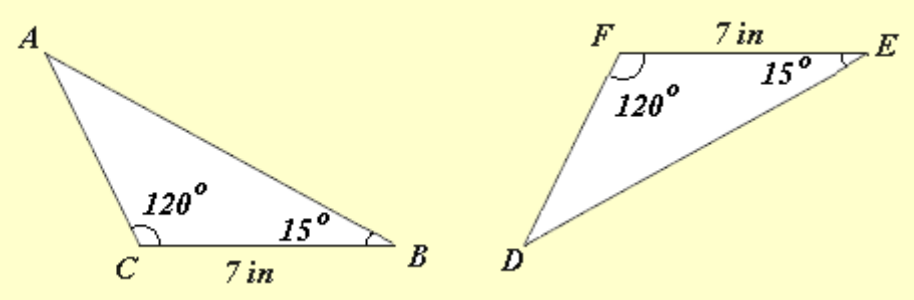
Exercise 4: Given that triangles ABC and DEF are similar, find the area of the triangle DEF. Round answer to the nearest tenth.



Exercise 5: Determine if the two triangles are congruent. If they are congruent, which rule is used to determine whether they are congruent.

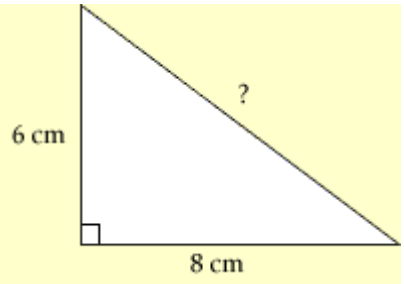


Exercise 6: Determine if the two triangles are congruent. If they are congruent, which rule is used to determine whether they are congruent.



Review Exercise Set 28 Answer Key

Exercise 1: Find the length of the unknown side of the given triangle. Round answer to the nearest tenth.



We will use the Pythagorean Theorem to solve for the unknown side.

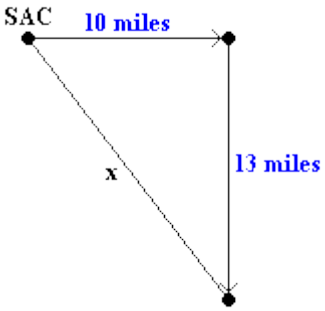
Let x = the unknown side

$a^2 + b^2 = c^2$
$(8\text{ cm})^2 + (6\text{ cm})^2 = x^2$
$64\text{ cm}^2 + 36\text{ cm}^2 = x^2$
$100\text{ cm}^2 = x^2$
$\sqrt{100}\text{ cm} = x$
10 cm = x

Exercise 2: Solve. Round answer to the nearest tenth.

If you started at San Antonio College and traveled east for 10 miles and then traveled south for 13 miles, how far away are you from San Antonio College?

To solve this problem it is help to draw a diagram of the problem.



Exercise 2 (Continued):

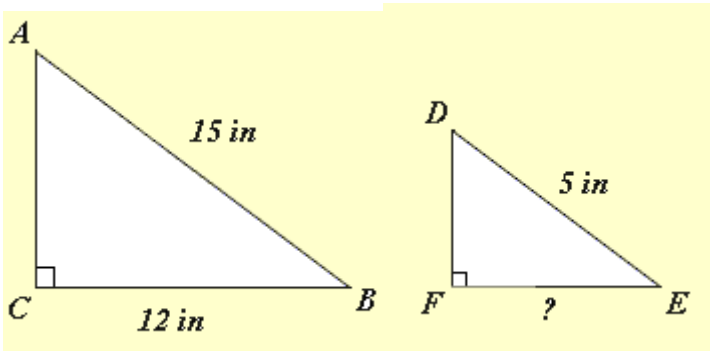
From the drawing we can see that the unknown distance is the hypotenuse of a right triangle, so again we can use the Pythagorean Theorem to solve for x.

Let x = the unknown side

$a^2 + b^2 = c^2$
$(10 \text{ miles})^2 + (13 \text{ miles})^2 = x^2$
$100 \text{ miles}^2 + 169 \text{ miles}^2 = x^2$
$269 \text{ miles}^2 = x^2$
$\sqrt{269}$ miles = x
16.4 miles $\approx$ x

You would be approximately 16.4 miles away from San Antonio College.

Exercise 3: Given that the two triangles below are similar, find the length of the side FE. Round answer to the nearest tenth.



Since the two triangles are similar the ratios of the corresponding sides must be equal, so we can use the proportion method to solve for the unknown side.

Sides AB and DE would be one set of corresponding sides
Sides CB and FE would be another set of corresponding sides

So our proportions would be:

$$\frac{AB}{DE} = \frac{CB}{FE}$$
$$\frac{15\,in}{5\,in} = \frac{12\,in}{x\,in}$$

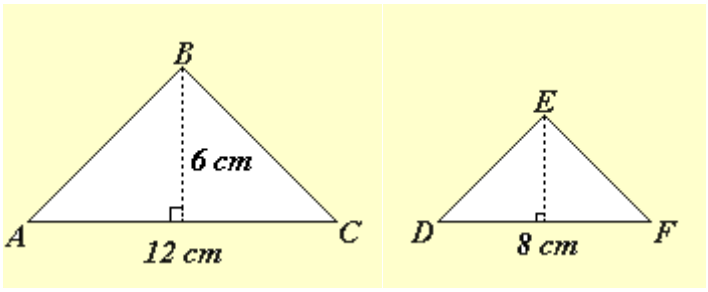
Exercise 3 (Continued):

Now cross-multiply to solve for x

(15)(x) = (5)(12)
15x = 60
x = 4

The length of side FE would be 4 inches.

Exercise 4: Given that triangles ABC and DEF are similar, find the area of the triangle DEF. Round answer to the nearest tenth.



Before we can determine the area of triangle DEF we must first determine its height. This problem is similar to Exercise 3 in that we will setup proportions between the corresponding sides of the two triangles to find the height.

Let h_1 represent the height of triangle ABC and h_2 represent the height of triangle DEF.

The proportion for these triangles would be:

$$\frac{AC}{h_1} = \frac{DF}{h_2}$$

$$\frac{12\ cm}{8\ cm} = \frac{6\ cm}{x\ cm}$$

Cross-multiply to solve for x

(12)(x) = (8)(6)
12x = 48
x = 4

The height of triangle DEF is 4 cm.

Exercise 4 (Continued):

Now we can find the area of triangle DEF.

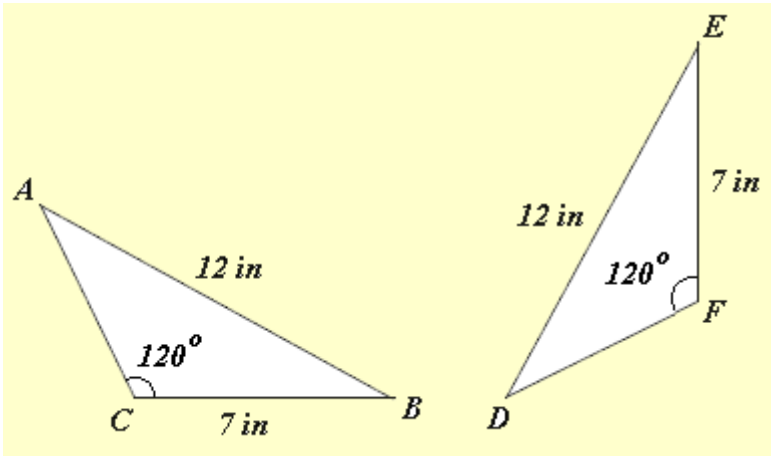
$A = \frac{1}{2}$ bh

$A = \frac{1}{2}$ (8 cm)(4 cm)

A = (4 cm)(4 cm)

A = 16 cm^2

Exercise 5: Determine if the two triangles are congruent. If they are congruent, which rule is used to determine whether they are congruent.

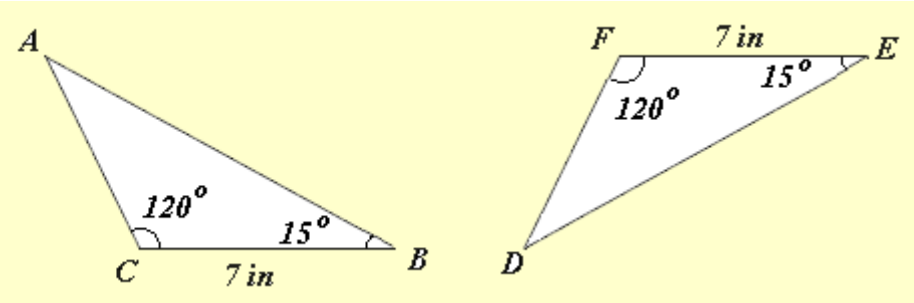


No, the triangles are not congruent.

In this problem we cannot prove that the triangles are congruent because we do not know the appropriate pieces of data to fit either the Side-Side-Side (SSS) rule, the Side-Angle-Side (SAS) rule, or the Angle-Side-Angle (ASA) rule.

We do know two of the sides and an angle but the known angle is not the included angle formed between the two known sides.

Exercise 6: Determine if the two triangles are congruent. If they are congruent, which rule is used to determine whether they are congruent.



Yes, the triangles are congruent because of the ASA rule.

In this problem, we know two of the angles and the included side in both triangles. Therefore, we can use the ASA rule to determine that they are congruent.