

Name: AK

9.2 Pythagorean Theorem Converse Practice Problems

Classify the triangle by its angles given its three side lengths.

1. 8 cm, 10 cm, 6 cm

$$8^2 = 64$$

$$10^2 = 100$$

$$6^2 = 36$$

$$6^2 + 8^2 = 10^2$$

Right

2. 7 ft, 7 ft, 6 ft

$$7^2 = 49$$

$$7^2 = 49$$

$$6^2 = 36$$

$$6^2 + 7^2 > 7^2$$

Acute

3.  $\sqrt{10}$  in, 9 in,  $2\sqrt{10}$  in

$$\sqrt{10}^2 = 10$$

$$9^2 = 81$$

$$(2\sqrt{10})^2 = 40$$

$$\sqrt{10}^2 + (2\sqrt{10})^2 < 9^2$$

Obtuse

4. 3 cm, 6 cm,  $3\sqrt{2}$  cm

$$3^2 = 9$$

$$6^2 = 36$$

$$(3\sqrt{2})^2 = 18$$

$$3^2 + (3\sqrt{2})^2 < 6^2$$

Obtuse

5. 9 mm,  $\sqrt{99}$  mm, 2 mm

$$9^2 = 81$$

$$\sqrt{99}^2 = 99$$

$$2^2 = 4$$

$$9^2 + 2^2 < \sqrt{99}^2$$

Obtuse

6. 2,  $\sqrt{5}$ , 3

$$2^2 = 4$$

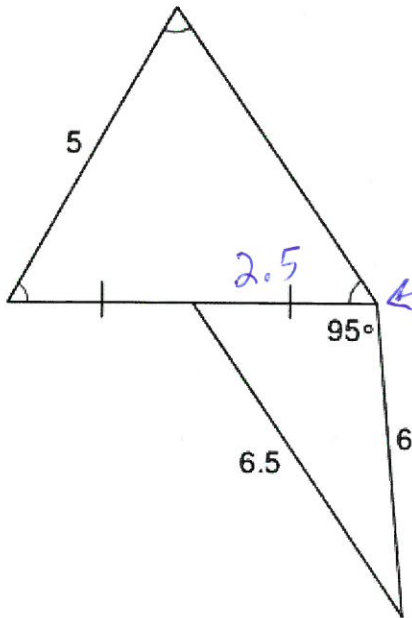
$$\sqrt{5}^2 = 5$$

$$3^2 = 9$$

$$2^2 + \sqrt{5}^2 = 3^2$$

Right

7. Describe what is wrong with the picture below.

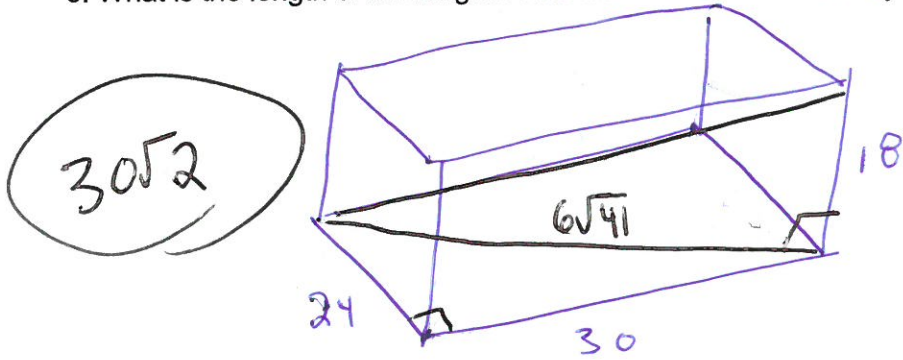


$$2.5^2 + 6^2 = 6.5^2$$

$$6.25 + 36 = 42.25$$

should be  $90^\circ$ .

8. What is the length of the longest stick that could fit in a 24 in by 18 in by 30 in box?



$30\sqrt{2}$

$$24^2 + 30^2 = x^2$$

$$\sqrt{1476}$$

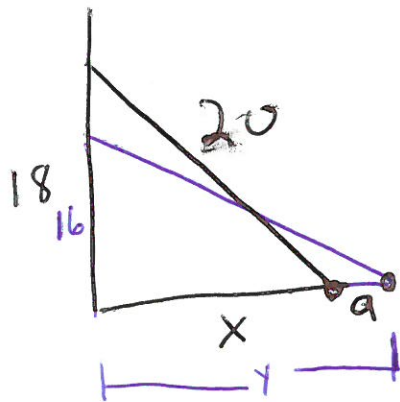
$$= 6\sqrt{41}$$

$$(6\sqrt{41})^2 + 18^2 = y^2$$

$$\sqrt{1800} = y$$

$$20\sqrt{2} = y$$

9. A 20 ft ladder reaches a window 18 ft high. How far is the foot of the ladder from the base of the building? How far must the foot of the ladder be moved to lower the top of the ladder by 2ft?



$$18^2 + x^2 = 20^2$$

$$x^2 = 76$$

$$x = \sqrt{76} \approx 8.7$$

$$16^2 + y^2 = 20^2$$

$$y^2 = 144$$

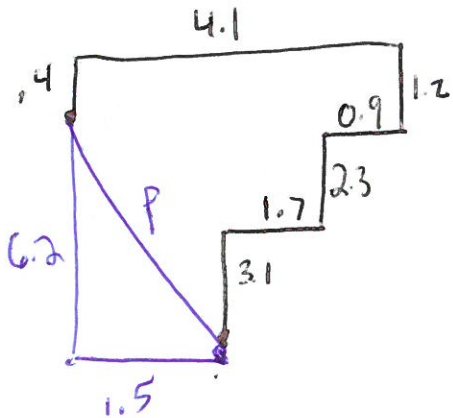
$$y = 12$$

$$x + a = y$$

$$8.7 + a = 12$$

$$a = 3.3$$

10. Luke and Leia have a pet pigeon that they train to race. They release their pigeon from Luke's house and the pigeon flies to Leia's house. From Luke's house, they drive the following route. They first drive 3.1 km north, turn right and go 1.7 km east, turn left and go 2.3 km north, turn right and go 0.9 km east, turn left and go 1.2 km north, turn left and go 4.1 km west, and finally turn left and go 0.4 km south. How far did the pigeon fly to go directly from Luke to Leia's house?



$$6.2^2 + 1.5^2 = P^2$$

$$6.38 = P$$