

Name: _____ Period: _____ Date: _____

Pythagorean Theorem Assignment

Identify whether the following triangle side lengths are from a right triangle using Pythagorean Theorem.

1. 2,5,6

2. 9,16,15

2. 8, 15,17

4. 3,4,5

5. 6,7,10

6. 7, 24,25

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Pythagorean Theorem Assignment

Find the Hypotenuse side of the following right triangles.

7. $a = 2, b = 3$

8. $a = 5, b = 6$

9. $a = 4, b = 6$

10. $a = 2, b = 5$

11. $a = 3, b = 7$

12. $a = 3, b = 8$

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Pythagorean Theorem Assignment

Find the missing sides of the following right triangles given their hypotenuse and one other side.

13. $a = 2, c = 9$

14. $c = 11, b = 6$

15. $a = 4, c = 10$

16. $c = 12, b = 5$

17. $a = 3, c = 8$

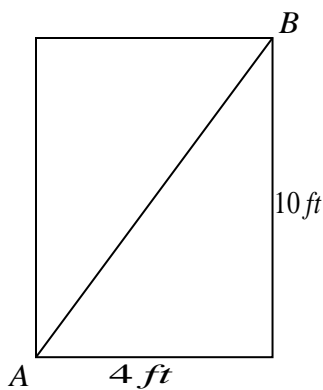
18. $c = 15, b = 8$

Pythagorean Theorem Assignment

Solve the following word problems

19. The base of a 32-m ladder is 10 m from the building. How high above the ground is the top of the ladder?

20. Movers are trying to take a large table through a door with the given dimensions. They want to know the length of diagonal AB. What is the length?



Pythagorean Theorem Assignment

Answers:

Identify whether the following triangles is a right triangle using Pythagorean Theorem.

1. 2,5,6

Solution:

$$2^2 + 5^2 = 6^2$$

$$4 + 25 = 36$$

$$29 \neq 36$$

Not a right triangle

2. 8, 15,17

Solution:

$$8^2 + 15^2 = 17^2$$

$$64 + 225 = 289$$

$$289 = 289$$

Right Triangle

5. 6,7,10

Solution:

$$6^2 + 7^2 = 10^2$$

$$36 + 49 = 100$$

$$85 \neq 100$$

Not a right triangle

2. 9,16,15

Solution:

$$9^2 + 15^2 = 16^2$$

$$81 + 225 = 256$$

$$306 \neq 256$$

Not a right triangle

4. 3,4,5

Solution:

$$3^2 + 4^2 = 5^2$$

$$9 + 16 = 25$$

$$25 = 25$$

Right triangle

6. 7, 24,25

Solution:

$$7^2 + 24^2 = 25^2$$

$$49 + 576 = 625$$

$$625 = 625$$

Right triangle

Find the Hypotenuse side of the following right triangle.

7. $a = 2, b = 3$

Solution:

$$c^2 = a^2 + b^2$$

$$c = \sqrt{a^2 + b^2}$$

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

$$c = \sqrt{4 + 9}$$

$$c = \sqrt{13}$$

8. $a = 5, b = 6$

Solution:

$$c^2 = a^2 + b^2$$

$$c = \sqrt{a^2 + b^2}$$

$$c = \sqrt{5^2 + 6^2}$$

$$c = \sqrt{25 + 36}$$

$$c = \sqrt{61}$$

9. $a = 4, b = 6$

Solution:

$$c^2 = a^2 + b^2$$

$$c = \sqrt{a^2 + b^2}$$

$$c = \sqrt{4^2 + 6^2}$$

$$c = \sqrt{16 + 36}$$

$$c = \sqrt{52}$$

$$c = 2\sqrt{13}$$

10. $a = 2, b = 5$

Solution:

$$c^2 = a^2 + b^2$$

$$c = \sqrt{a^2 + b^2}$$

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

$$c = \sqrt{4 + 25}$$

$$c = \sqrt{29}$$

Pythagorean Theorem Assignment

11. $a = 3, b = 7$

Solution:

$$c^2 = a^2 + b^2$$

$$c = \sqrt{a^2 + b^2}$$

$$c = \sqrt{3^2 + 7^2}$$

$$c = \sqrt{9 + 49}$$

$$c = \sqrt{58}$$

12. $a = 3, b = 8$

Solution:

$$c^2 = a^2 + b^2$$

$$c = \sqrt{a^2 + b^2}$$

$$c = \sqrt{3^2 + 8^2}$$

$$c = \sqrt{9 + 64}$$

$$c = \sqrt{73}$$

Find the missing sides of the following right triangle given their hypotenuse and one other side.

13. $a = 2, c = 9$

$$c^2 = a^2 + b^2$$

$$b^2 = c^2 - a^2$$

$$b = \sqrt{c^2 - a^2}$$

$$b = \sqrt{9^2 - 2^2}$$

$$b = \sqrt{81 - 4}$$

$$b = \sqrt{77}$$

14. $c = 11, b = 6$

$$c^2 = a^2 + b^2$$

$$a^2 = c^2 - b^2$$

$$a = \sqrt{c^2 - b^2}$$

$$a = \sqrt{11^2 - 6^2}$$

$$a = \sqrt{121 - 36}$$

$$a = \sqrt{85}$$

15. $a = 4, c = 10$

$$c^2 = a^2 + b^2$$

$$b^2 = c^2 - a^2$$

$$b = \sqrt{c^2 - a^2}$$

$$b = \sqrt{10^2 - 4^2}$$

$$b = \sqrt{100 - 16}$$

$$b = \sqrt{84}$$

16. $c = 12, b = 5$

$$c^2 = a^2 + b^2$$

$$a^2 = c^2 - b^2$$

$$a = \sqrt{c^2 - b^2}$$

$$a = \sqrt{12^2 - 5^2}$$

$$a = \sqrt{144 - 25}$$

$$a = \sqrt{119}$$

17. $a = 3, c = 8$

$$c^2 = a^2 + b^2$$

$$b^2 = c^2 - a^2$$

$$b = \sqrt{c^2 - a^2}$$

$$b = \sqrt{8^2 - 3^2}$$

$$b = \sqrt{64 - 9}$$

$$b = \sqrt{55}$$

18. $c = 15, b = 8$

$$c^2 = a^2 + b^2$$

$$a^2 = c^2 - b^2$$

$$a = \sqrt{c^2 - b^2}$$

$$a = \sqrt{15^2 - 8^2}$$

$$a = \sqrt{225 - 64}$$

$$a = \sqrt{161}$$

Solve the following word problems

Pythagorean Theorem Assignment

19. The base of a 32-m ladder is 10 m from the building. How high above the ground is the top of the ladder?

Given: $c = 32\text{m}$, $a = 10\text{ m}$

Solution:

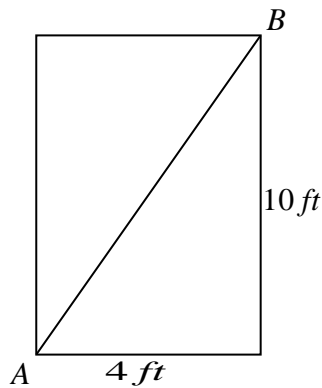
$$b = \sqrt{c^2 - a^2}$$

$$b = \sqrt{32^2 - 10^2}$$

$$b = \sqrt{1024 - 100}$$

$$b = \sqrt{924} \text{ or } 30.39 \text{ m}$$

20. Movers are trying to take a large table through a door with the given dimensions. They want to know the length of diagonal AB. What is the length?



Given: $a: 36\text{cm}$, $b: 80\text{cm}$

Solution:

$$c^2 = a^2 + b^2$$

$$c = \sqrt{a^2 + b^2}$$

$$c = \sqrt{4^2 + 10^2}$$

$$c = \sqrt{16 + 100}$$

$$c = \sqrt{116} \text{ or } 2\sqrt{29}$$