

**A.A.45: Pythagorean Theorem 1: Determine the measure of a third side of a right triangle using the Pythagorean theorem, given the lengths of any two sides**

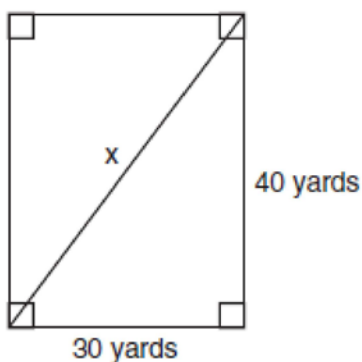
- 1 The lengths of the sides of a right triangle can be

1) 9, 12, 15  
2) 8, 10, 13  
3) 5, 5, 10  
4) 4, 5, 6

- 2 Which set of numbers represents the lengths of the sides of a right triangle?

1) {7, 24, 25}  
2) {9, 16, 23}  
3) {10, 12, 14}  
4) {14, 16, 18}

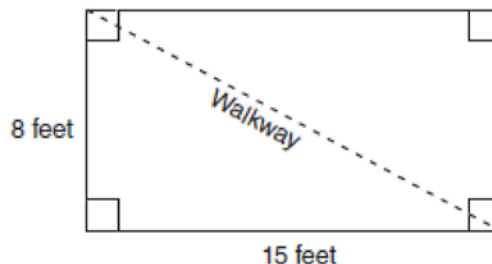
- 3 Tanya runs diagonally across a rectangular field that has a length of 40 yards and a width of 30 yards, as shown in the diagram below.



What is the length of the diagonal, in yards, that Tanya runs?

1) 50  
2) 60  
3) 70  
4) 80

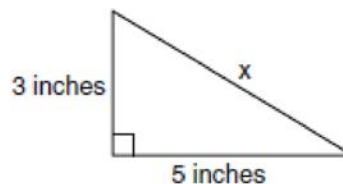
- 4 Nancy's rectangular garden is represented in the diagram below.



If a diagonal walkway crosses her garden, what is its length, in feet?

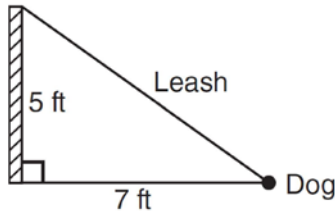
1) 17  
2) 22  
3)  $\sqrt{161}$   
4)  $\sqrt{529}$

- 5 What is the value of  $x$ , in inches, in the right triangle below?



1)  $\sqrt{15}$   
2) 8  
3)  $\sqrt{34}$   
4) 4

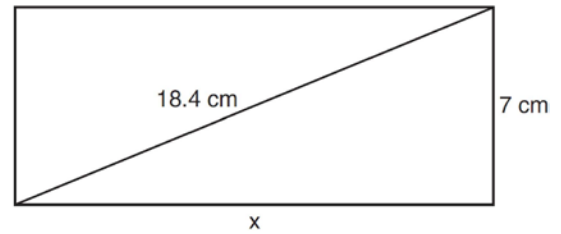
- 6 The end of a dog's leash is attached to the top of a 5-foot-tall fence post, as shown in the diagram below. The dog is 7 feet away from the base of the fence post.



How long is the leash, to the *nearest tenth of a foot*?

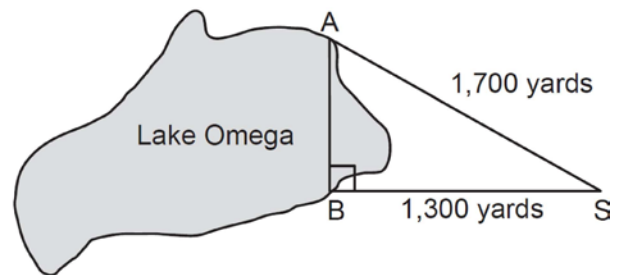
- 1) 4.9
  - 2) 8.6
  - 3) 9.0
  - 4) 12.0
- 7 The legs of an isosceles right triangle each measure 10 inches. What is the length of the hypotenuse of this triangle, to the *nearest tenth of an inch*?
- 1) 6.3
  - 2) 7.1
  - 3) 14.1
  - 4) 17.1
- 8 The length of one side of a square is 13 feet. What is the length, to the *nearest foot*, of a diagonal of the square?
- 1) 13
  - 2) 18
  - 3) 19
  - 4) 26
- 9 The length and width of a rectangle are 48 inches and 40 inches. To the *nearest inch*, what is the length of its diagonal?
- 1) 27
  - 2) 62
  - 3) 88
  - 4) 90

- 10 The rectangle shown below has a diagonal of 18.4 cm and a width of 7 cm.



To the *nearest centimeter*, what is the length,  $x$ , of the rectangle?

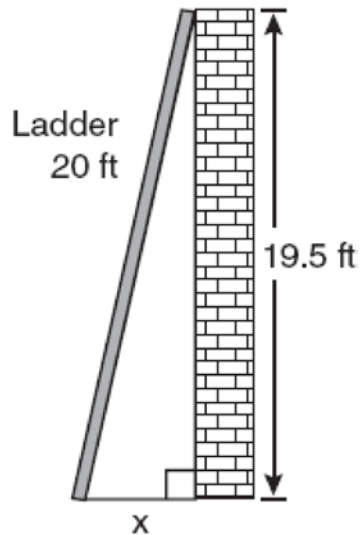
- 1) 11
  - 2) 17
  - 3) 20
  - 4) 25
- 11 Campsite  $A$  and campsite  $B$  are located directly opposite each other on the shores of Lake Omega, as shown in the diagram below. The two campsites form a right triangle with Sam's position,  $S$ . The distance from campsite  $B$  to Sam's position is 1,300 yards, and campsite  $A$  is 1,700 yards from his position.



What is the distance from campsite  $A$  to campsite  $B$ , to the *nearest yard*?

- 1) 1,095
- 2) 1,096
- 3) 2,140
- 4) 2,141

- 12 Don placed a ladder against the side of his house as shown in the diagram below.



Which equation could be used to find the distance,  $x$ , from the foot of the ladder to the base of the house?

- 1)  $x = 20 - 19.5$
  - 2)  $x = 20^2 - 19.5^2$
  - 3)  $x = \sqrt{20^2 - 19.5^2}$
  - 4)  $x = \sqrt{20^2 + 19.5^2}$
- 13 The length of the hypotenuse of a right triangle is 34 inches and the length of one of its legs is 16 inches. What is the length, in inches, of the other leg of this right triangle?
- 1) 16
  - 2) 18
  - 3) 25
  - 4) 30
- 14 In triangle  $RST$ , angle  $R$  is a right angle. If  $TR = 6$  and  $TS = 8$ , what is the length of  $RS$ ?
- 1) 10
  - 2) 2
  - 3)  $2\sqrt{7}$
  - 4)  $7\sqrt{2}$

- 15 In right triangle  $ABC$ ,  $m\angle C = 90^\circ$ ,  $AC = 7$ , and  $AB = 13$ . What is the length of  $BC$ ?

- 1) 6
- 2) 20
- 3)  $\sqrt{120}$
- 4)  $\sqrt{218}$

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**Answer Section**

1 ANS: 1 REF: 061415ia

2 ANS: 1

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

REF: 011526ia

3 ANS: 1

$30^2 + 40^2 = c^2$ . 30, 40, 50 is a multiple of 3, 4, 5.

$$2500 = c^2$$

$$50 = c$$

REF: fall0711ia

4 ANS: 1

$$8^2 + 15^2 = c^2$$

$$c^2 = 289$$

$$c = 17$$

REF: 080906ia

5 ANS: 3

$$3^2 + 5^2 = x^2$$

$$34 = x^2$$

$$\sqrt{34} = x$$

REF: 060909ia

6 ANS: 2

$$\sqrt{5^2 + 7^2} \approx 8.6$$

REF: 081004ia

7 ANS: 3

$$10^2 + 10^2 = c^2$$

$$c^2 = 200$$

$$c \approx 14.1$$

REF: 061102ia

8 ANS: 2

$$13^2 + 13^2 = x^2$$

$$338 = x^2$$

$$\sqrt{338} = x$$

$$18 \approx x$$

REF: 061223ia

9 ANS: 2

$$\sqrt{48^2 + 40^2} = \sqrt{2304 + 1600} = \sqrt{3904} \approx 62$$

REF: 011417ia

10 ANS: 2

$$\sqrt{18.4^2 - 7^2} \approx 17$$

REF: 011107ia

11 ANS: 1

$$\sqrt{1700^2 - 1300^2} \approx 1095$$

REF: 011221ia

12 ANS: 3

REF: 060825ia

13 ANS: 4

$$16^2 + b^2 = 34^2$$

$$b^2 = 900$$

$$b = 30$$

REF: 080809ia

14 ANS: 3

$$\sqrt{8^2 - 6^2} = \sqrt{28} = \sqrt{4} \sqrt{7} = 2\sqrt{7}$$

REF: 061329ia

15 ANS: 3

$$\sqrt{13^2 - 7^2} = \sqrt{120}$$

REF: 081323ia