

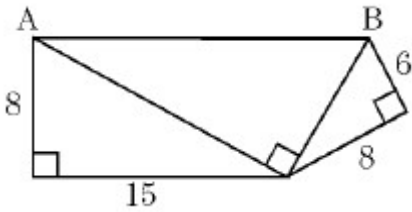
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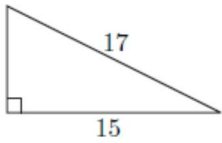
**Assignment Pythagorean Theorem and Triples**

1. Dave drove 25km North, 1 km West, 15 km South and 8 km east. How far is he from his starting point?

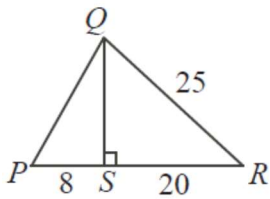
2. Find the length of segment AB in the diagram:



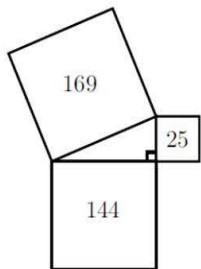
3. In the right-angled triangle below, the hypotenuse has length 17 units and one of the legs has length 15 units. How many units<sup>2</sup> are in the area of the triangle?



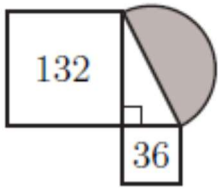
4. In the diagram, what is the perimeter of  $\triangle PQR$  ?



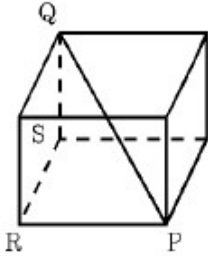
5. Given the areas of the three squares in the figure, what is the area of the interior triangle?



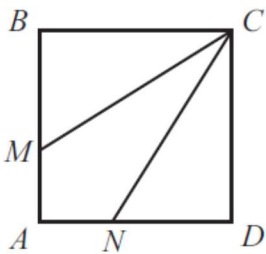
6. Squares are erected on the legs of a right-angled triangle. These squares have areas 36 and 132 as shown. A semicircle (Shaded) is drawn with hypotenuse as diameter. What is the area of the semi-circle? Give your answer in terms of pi.



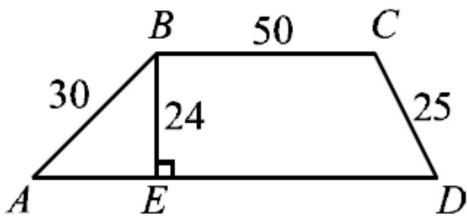
7. Given that  $RS = 4\text{cm}$ ,  $PR = 7\text{cm}$ , and  $QS = 5\text{cm}$ , what is the length of  $QP$ ?



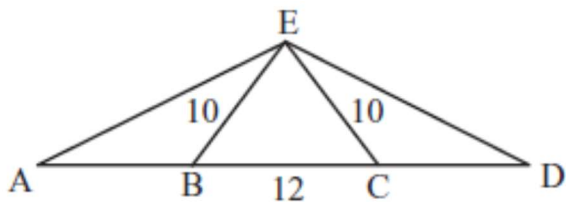
8. Square  $ABCD$  has sides of length 3. Segments  $CM$  and  $CN$  divide the square's area into three equal parts. How long is segment  $CM$ ?



9. What is the perimeter of trapezoid  $ABCD$ ?

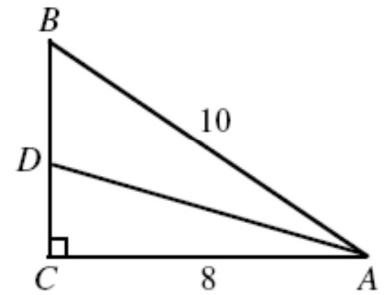


10. Points  $A, B, C,$  and  $D$  lie on a line, in that order, with  $AB=CD$  and  $BC=12$ . Point  $E$  is not on the line, and  $BE=CE=10$ . The perimeter of  $\triangle AED$  is twice the perimeter of  $\triangle BEC$ . Find  $AB$ .



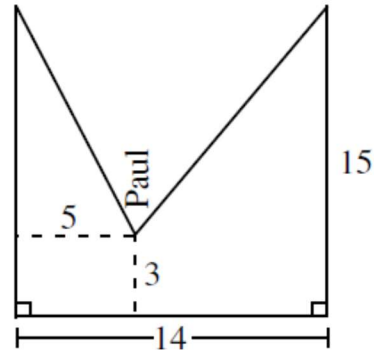
Triangle  $ABC$  is right-angled with  $AB = 10$  and  $AC = 8$ . If  $BC = 3DC$ , then  $AD$  equals

- (A) 9                      (B)  $\sqrt{65}$                       (C)  $\sqrt{80}$   
 (D)  $\sqrt{73}$                       (E)  $\sqrt{68}$



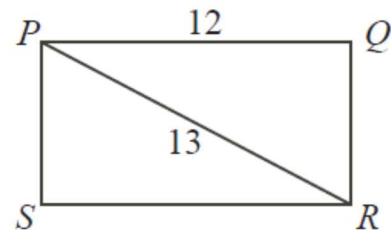
A “slackrope walker” is much like a tightrope walker except that the rope on which he performs is not pulled tight. Paul, a slackrope walker, has a rope tied to two 15 m high poles which are 14 m apart. When he is standing on the rope 5 m away from one of the poles, he is 3 m above the ground. How long is the rope?

- (A) 28 m                      (B) 30 m                      (C) 27 m  
 (D) 26 m                      (E) 29 m



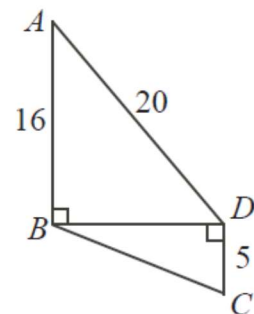
In rectangle  $PQRS$ ,  $PQ = 12$  and  $PR = 13$ . The area of rectangle  $PQRS$  is

- (A) 30                      (B) 60                      (C) 36  
 (D) 78                      (E) 72



In the diagram, what is the length of  $BC$ ?

- (A) 13                      (B) 12                      (C) 20  
 (D) 16                      (E) 17



Pythagorean Triples are right triangles that have whole number sides. The most famous Pythagorean triple is the 3-4-5 triangle, since  $3^2 + 4^2 = 5^2$ .

List as many Pythagorean Triples as you can with sides under 100: (you can google if you get stuck)

a	b	c	Check: $a^2 + b^2 = c^2$ ?

Prove that if one leg of a right triangle and the hypotenuse are consecutive values, then the other leg must be an odd number.