Geometry + LAB   Name _____ Date _____ Section _____
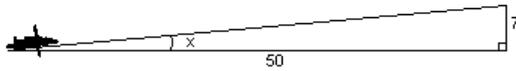
<u>**WORKSHEET 8-10R/8-12LAB Slope & Mixed Practice**</u>

1. In the diagram, the slope of the ascent of an aircraft is $\dfrac{7}{50}$.

    Find m $\angle x$, the angle of elevation, to the *nearest degree*.

    1. 6°
    2. 8°
   3. 12°
    4. 15°

2. A submarine is diving down with an angle of depression of 18°. Find the slope of the line representing it's downward path.

Keep in mind that you have multiple tools to solve each problem. When might you want to use each of the following?

- **Pythagorean Theorem & its converse**
- **Pythagorean Triplets**
- **Special Right Triangles (Regents only)**
- **Geometric Mean**

- **Trigonometry**
- **Inverse Trigonometry**
- **Complementary Sine & Cosine Functions**
- **Pythagorean Theorem w/Trig Ratios**

3. Using the drawing of the triangle at right and without solving,
    a. Which method would you use to find the exact values of x and y?
        _____

    b. Which method could you also use to find the approximate values of x & y?
   _____
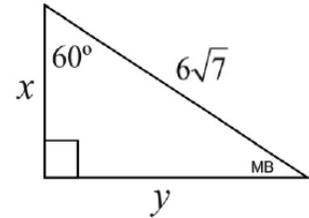
4. A rectangular patio is 13 feet by 84 feet. In walking from one corner of the patio to the opposite corner, how much distance is saved by cutting diagonally across the patio rather than walking around the edge?
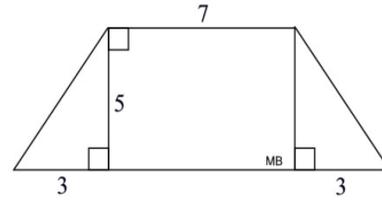
5. Find the exact values of w, x, y, and z.
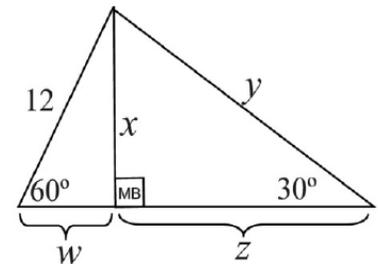
    Why can't you use the geometric mean without first solving for one of the variables for this problem?
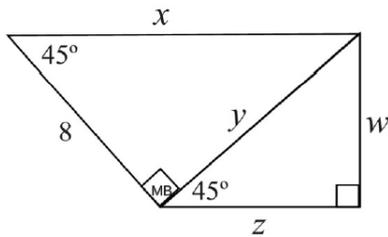
6. Find QR.

12

P —— S — R
   8
   MathBits.com
        Q
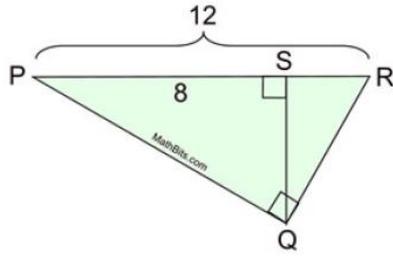
7. Find the perimeter of the trapezoid.

7

5

MB

3   3

8. Find the exact values of w, x, y, z.

x

45°

8   y w

MB 45°

z

9. If sin6A=cos 9A, then $m\angle A = $ _____
   a.   6
   b.   36
   c.   64
   d.   1.5

10. Which of the following could be the sides of a right scalene triangle?
   a. $5, 5, 5\sqrt{2}$
   b.   7, 24, 25
   c.   6, 7, 8
   d.   1, 2, 3

11. Find the numerical value of the expression: sin30° + cos60°.
   a.   1
   b.   ¼
   c. $\sqrt{3}$
   d. $\frac{\sqrt{3}+1}{2}$

12. What is the perimeter of an equilateral triangle with whose height is $2\sqrt{3}$?

13. If the perimeter of an equilateral triangle is 18, what is the length of the altitude?
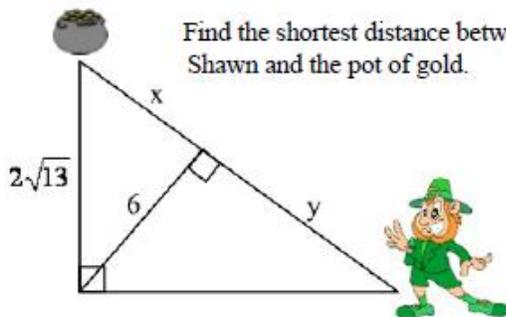
14. In rectangle $ABCD$, $AD = 10$, $CD = 8$, and diagonal $\overline{AC}$ is drawn. Find, to the *nearest degree*, m $\angle CAD$.

    1. 36°
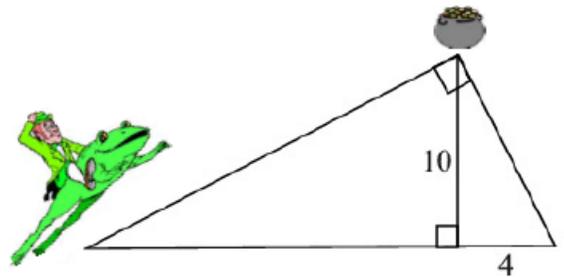   2. 39°
    3. 51°
    4. 54°

15. In isosceles trapezoid $ABCD$, $\overline{AB} \cong \overline{CD}$. If $BC = 20$, $AD = 36$, and $AB = 17$, what is the length of the altitude of the trapezoid?

    1. 10
    2. 12
    3. 15
    4. 16

16.

Find the shortest distance between Shawn and the pot of gold.

17. Shawn decides to ride his frog to his pot of gold, as shown in the diagram below. Find the exact distance he will need to ride for the shortest trip to the pot of gold.

18. In which of the accompanying figures are segments $\overline{XY}$ and $\overline{YZ}$ perpendicular?
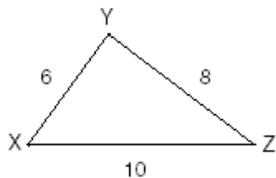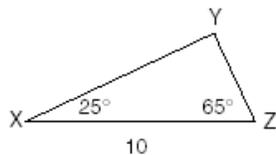

Figure 1

Figure 2

    1. figure 1, only
    2. figure 2, only
    3. both figure 1 and figure 2
    4. neither figure 1 nor figure 2

19. If $\sin \theta = \dfrac{2}{3}$ and θ is in Quadrant I, what is the value of $(\tan \theta)(\cos \theta)$?

    1. $\dfrac{2}{3}$

    2. $\dfrac{\sqrt{5}}{3}$

    3. $\dfrac{3\sqrt{5}}{3}$

    4. $\dfrac{2\sqrt{5}}{3}$

20. The accompanying diagram shows ramp $\overline{RA}$ leading to level platform $\overline{AM}$, forming an angle of 45° with level ground. If platform $\overline{AM}$ measures 2 feet and is 6 feet above the ground, what is the exact length of ramp $\overline{RA}$?
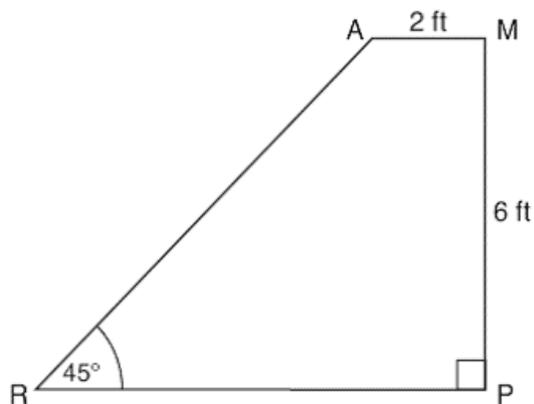
    1. $6\sqrt{2}$
    2. $36\sqrt{2}$
    3. $9\sqrt{8}$
    4. $12\sqrt{3}$

Compare your results with the length RA using a trig ratio with ∡R as the reference angle:

Compare your results with the length RA using a trig ratio with A as the vertex of the reference angle: