

KEY

Name _____

Per/Sec. _____

1. Find the distance between $(-5, 6)$ and $(-9, 6)$.

$$d^2 = \sqrt{(-9 - -5)^2 + (6 - 6)^2} = \sqrt{16} = 4$$

2. Find the distance between $(-3, 2)$ and $(-3, -5)$.

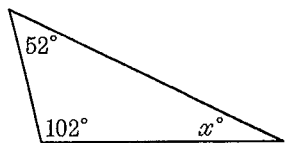
$$|-5 - 2| = 7$$

3. Find the distance between $(3, -5)$ and $(-1, 2)$.

$$d^2 = (-1 - 3)^2 + (2 - -5)^2 = 4^2 + 7^2 = 16 + 49$$

$$d = \sqrt{16 + 49} = \sqrt{65} \approx 8.062$$

4. Find the value of x in the diagram.



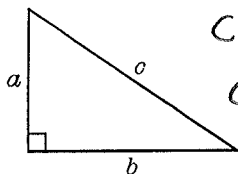
$$52 + 102 + x = 180$$

$$x = 180 - 154 = 26$$

5. In a right triangle, the side opposite the right angle is called the _____. *hypotenuse*

6. In a right triangle, the sides that form the right angle are called the _____. *legs*

7. In the diagram, $a = 3$ and $b = 4$. Find c .



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

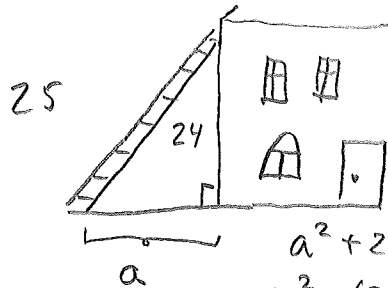
$$c = \sqrt{9 + 16} = \sqrt{25} = 5$$

8. In the diagram, $a = 7$ and $b = 24$. Find c .

$$c^2 = 7^2 + 24^2 = 49 + 576 = 625$$

$$c = \sqrt{625} = 25$$

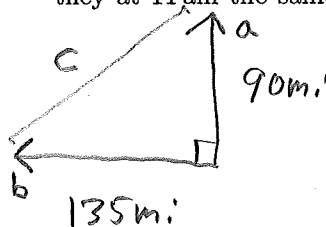
9. If a 25-foot ladder is placed against a wall so that it reaches a height of 24 feet, how far away from the base of the wall are the feet of the ladder?



$$a^2 + 24^2 = 25^2$$

$$a^2 = 625 - 576 = 49 \quad \boxed{7 \text{ ft}}$$

10. Two vehicles leave the same town at 8 am. One travels north at 30 mph, the other travels west at 45 mph. To the nearest hundredth of a mile, how far apart are they at 11 am the same day?



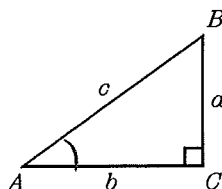
time elapsed = 3h.

$$a = v_a t = 30 \cdot 3$$

$$b = v_b t = 45 \cdot 3$$

$$c = \sqrt{90^2 + 135^2} = \sqrt{8100 + 18225} = \sqrt{26325} = 162 \text{ mi}$$

11. What is the sine ratio of $\angle A$?

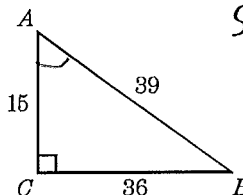


$$\frac{a}{c} = \sin A$$

12. What is the cosine ratio of $\angle A$?

$$\frac{b}{c} = \cos A$$

13. Given $\triangle ABC$ shown, express the *sine*, *cosine*, and *tangent* of $\angle A$ as reduced fractions.

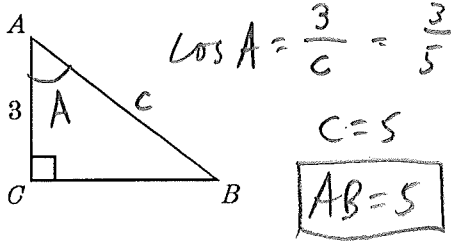


$$\sin A = \frac{36}{39} = \frac{12}{13}$$

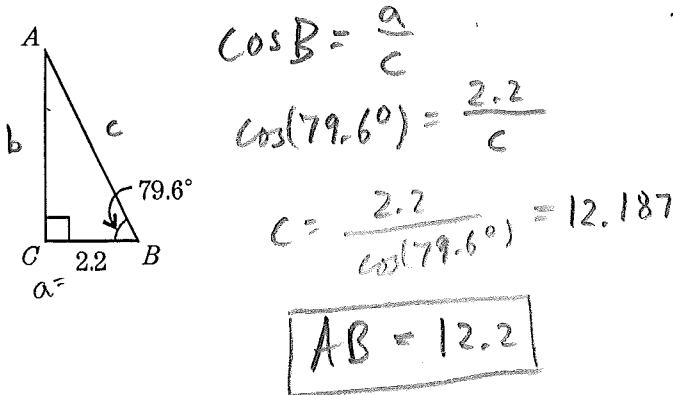
$$\cos A = \frac{15}{39} = \frac{5}{13}$$

$$\tan A = \frac{36}{15} = \frac{12}{5}$$

14. If $\cos \angle A = \frac{3}{5}$, find AB.



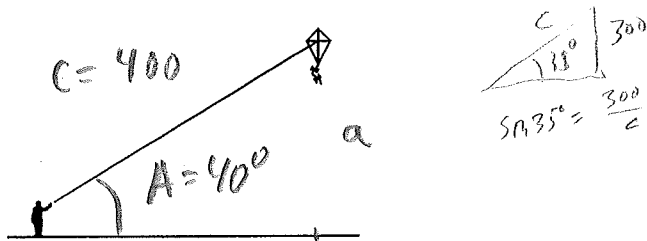
15. Find AB to the nearest tenth.



16. Use a calculator to find the values of the following ratios to four decimal places.

- a) $\sin 10^\circ$ 0.1736
- b) $\cos 80^\circ$ 0.1736
- c) $\tan 50^\circ$ 1.1918
- d) $\sin 65^\circ$ 0.9063
- e) $\tan 40^\circ$ 0.8391

17. When I went kite flying the other day, I managed to let out an entire roll of string (400 feet). If the string, when pulled tight, formed a 40° angle with the ground, about how high was the kite?

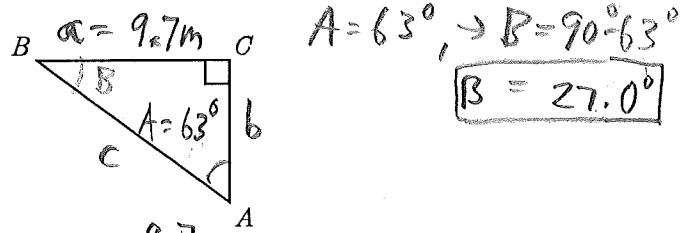


$\sin A = \frac{a}{c}$
 $\sin(40^\circ) = \frac{a}{400}$

$a = 400 \sin(40^\circ) = 257.115$

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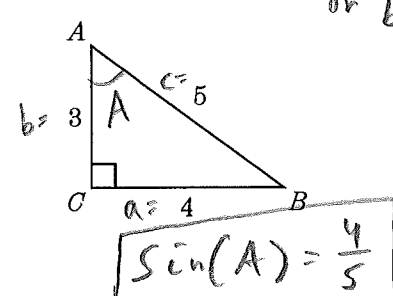
18. Solve the right triangle if $\angle A = 63^\circ$ and $a = 9.7$ meters. Give lengths to 3 significant figures and angles to the nearest tenth of a degree.



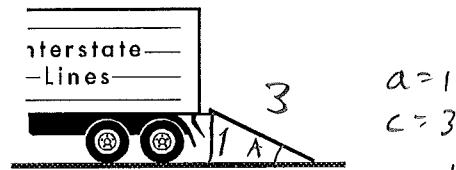
3 ways to find b

$\sin 63^\circ = \frac{9.7}{c}$
 $c = 9.7 / \sin 63^\circ = 10.9m = c$
 $\tan 63^\circ = \frac{9.7}{b}$
 $b = 9.7 / \tan 63^\circ = 4.94m = b$
 $b = \sqrt{10.887^2 - 9.7^2} = \sqrt{24.437} = 4.94m$
 $\sin \angle = \frac{4}{5}$

$\text{or } b = 10.887 \cdot \cos 63^\circ = 4.94m$



20. One end of a ramp is raised to the back of a truck 1 meter above the ground. If the length of the ramp is 3 meters, what is the approximate measure of the angle the ramp makes with the ground? Round your answer to the nearest tenth of a degree.



RATIO \rightarrow ANGLE.
 inverse sine
 $\boxed{2nd} \boxed{\sin^{-1}} \boxed{\sin}$

$\sin A = \frac{1}{3}$
 $A = \sin^{-1}(\frac{1}{3})$
 $= 19.5^\circ$

18. $\angle B = 27.0^\circ, b \approx 4.94m, c \approx 10.9m$

19.	A	0.8391
16.	0.1736; 0.1736; 1.1918; 0.9063;	
17.	$\approx 257.1ft$	
15.	12.2	
14.	5	
11.	$\frac{c}{2}$	
9.	7ft	
8.	25	
5.	hypotenuse	
6.	legs	
7.	$\sqrt{65}$	

Answer List