

Math 2 Unit 7 Worksheet 1
Radicals and Pythagorean Theorem

Name: _____
Date: _____ Per: _____

[1-12] Simplify each radical expression.

1. $\sqrt{75}$

2. $\sqrt{24}$

3. $7\sqrt{32}$

4. $10\sqrt{12}$

5. $2\sqrt{6} \cdot \sqrt{3}$

6. $2\sqrt{15} \cdot 3\sqrt{20}$

7. $(\sqrt{11})^2$

8. $(\sqrt{9})^2$

9. $(3\sqrt{2})^2$

10. $(5\sqrt{3})^2$

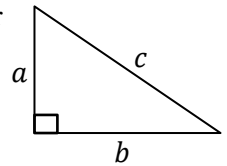
11. $(7\sqrt{5})^2$

12. $(\sqrt{189})^2$

[13-16] Using the Pythagorean Theorem, find the missing side of each right triangle. Leave your answer in simplest radical form.

13. $a = 5 \text{ km}$, $b = 6 \text{ km}$

14. $b = 3 \text{ yd}$, $c = \sqrt{15} \text{ yd}$

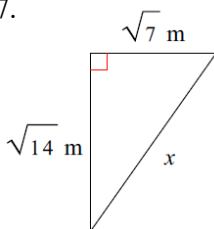


15. $a = 4 \text{ km}$, $b = 6 \text{ km}$

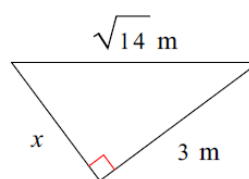
16. $a = \sqrt{5} \text{ km}$, $b = \sqrt{7} \text{ km}$

[17-20] Find the missing side of each triangle. Leave your answer in simplest radical form.

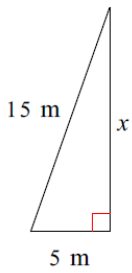
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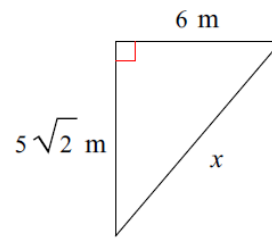
18.



19.

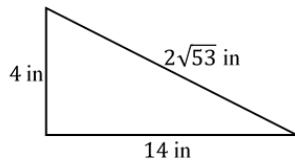


20.

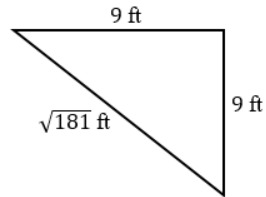


[21-24] State if each triangle is a right triangle. Show work to support your answer.

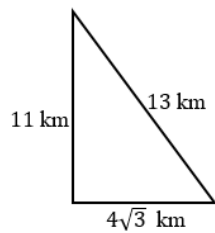
21.



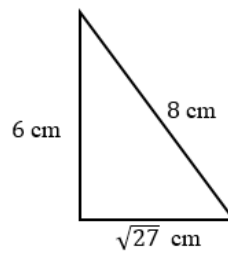
22.



23.



24.



[25-30] Rationalize the denominator.

25. $\frac{3}{\sqrt{5}}$

26. $\frac{5}{2\sqrt{6}}$

27. $\frac{6}{4\sqrt{2}}$

28. $\frac{6}{3\sqrt{7}}$

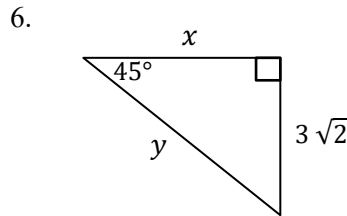
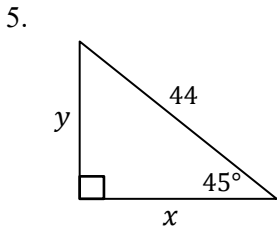
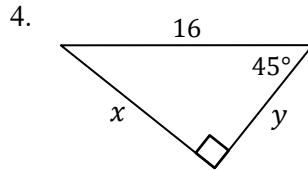
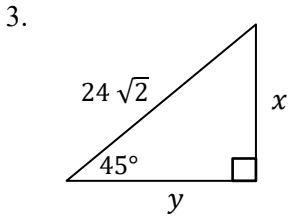
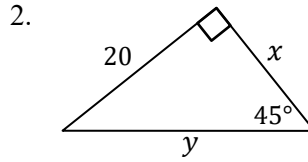
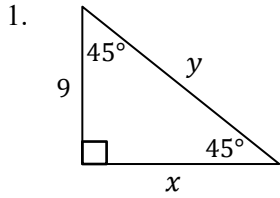
29. $\frac{\sqrt{6}}{\sqrt{3}}$

30. $\frac{2\sqrt{7}}{\sqrt{2}}$

Math 2 Unit 7 Worksheet 2
Special Right Triangles

Name: _____
Date: _____ Per: _____

[1-6] Find the value of each variable. If your answer is not an integer, express it in simplest radical form.
Triangles not to scale.



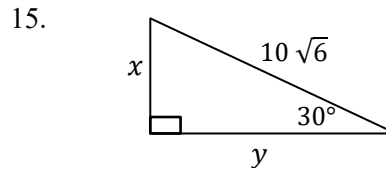
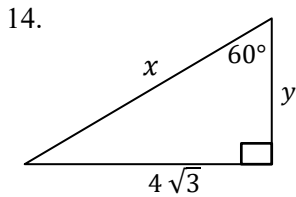
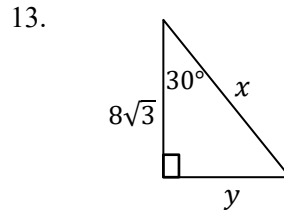
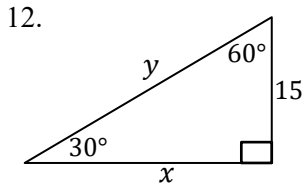
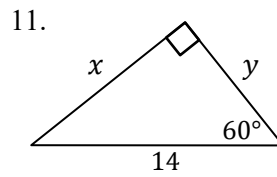
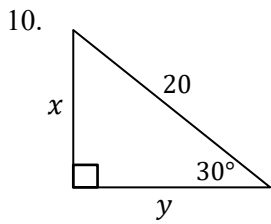
[7-9] Sketch the figure for each problem and solve for the missing distance.

7. An architect is planning a new town square. The square has sides that are 20 ft long. A walkway will also cut diagonally through the square. How long will the walkway be? **Round to the nearest tenth of a foot.**

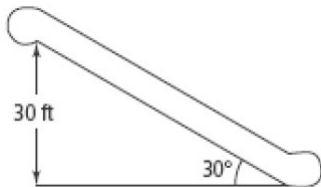
8. A square has a side length of $11\sqrt{2}$ meters. What is the length of the diagonal of the square?

9. A square has a diagonal of 15 cm. What is the length of a side? **Express in simplest radical form.**

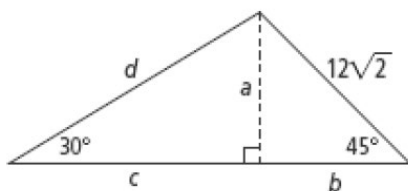
[10-15] Find the value of each variable. If your answer is not an integer, express it in simplest radical form.



16. The top of a giant slide is 30 ft off the ground. The slide rises at a 30° angle. **To the nearest whole foot, what is the distance down the slide?**



17. Find the value of each variable. If your answer is not an integer, express it in simplest radical form.

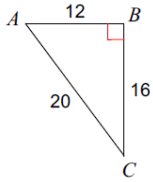


Math 2 Unit 7 Worksheet 3
Trigonometry Ratios

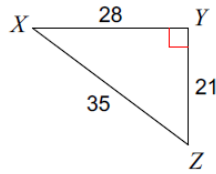
Name: _____
 Date: _____ Per: _____

[1-3] Find the value of each trigonometric ratio in reduced fraction form.

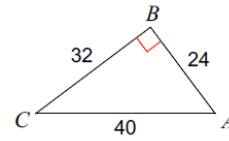
1. $\tan A$



2. $\sin X$

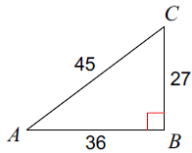


3. $\cos C$

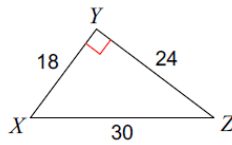


[4-6] Find the value of each trigonometric ratio in decimal form. Round to the nearest tenth.

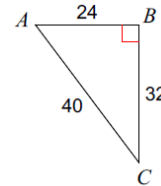
4. $\cos A$



5. $\sin X$

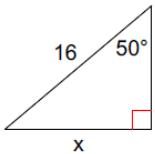


6. $\tan A$

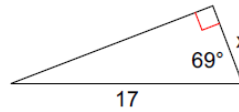


[7-20] Find the missing side. Round to the nearest tenth.

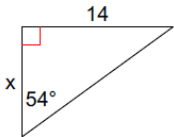
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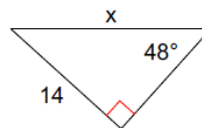
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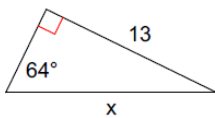
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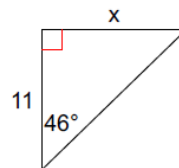
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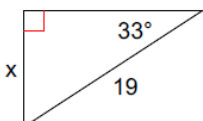
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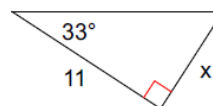
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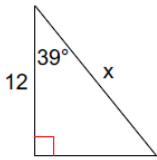
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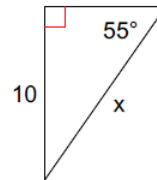
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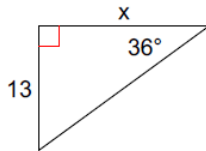
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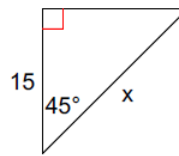
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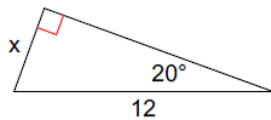
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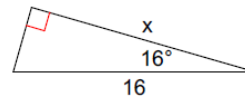
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19.



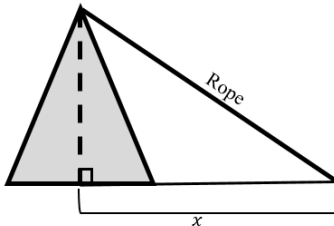
20.



[21-22] Sketch the figure for each problem and solve for the missing distance.

21. The ramp on the back of a moving van is 3 feet high and rises at an angle of 25° . How long is the ramp? **Round to the nearest foot.**

22. A rope is attached to the top of a tent, and is staked into the ground. The rope is 4.5 feet long. The angle formed by the rope and the ground is 46° . How far from the center of the base of the tent is the rope stake? **Round to the nearest tenth of a foot.**

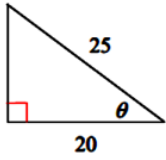


Math 2 Unit 7 Worksheet 4
Trigonometry and Inverse Functions

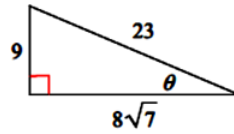
Name: _____
 Date: _____ Per: _____

[1-4] Find the value of each trigonometric ratio in reduced fraction form.

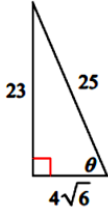
1. $\cos \theta$



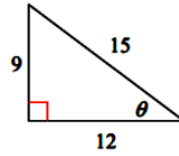
2. $\sin \theta$



3. $\sin \theta$

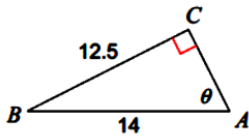


4. $\tan \theta$

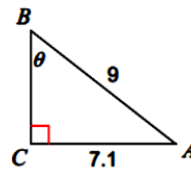


[5-14] Find the measure of each angle indicated. Round to the nearest tenth.

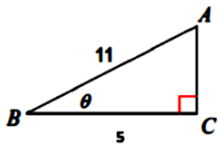
5.



6.



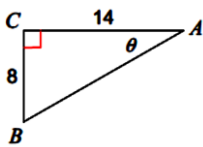
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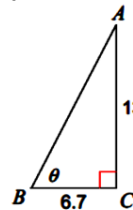
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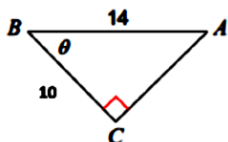
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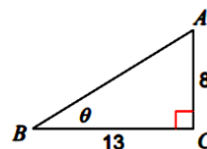
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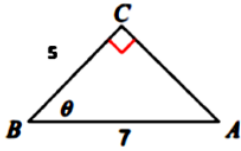
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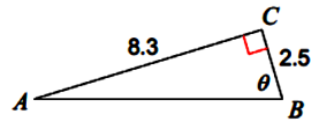
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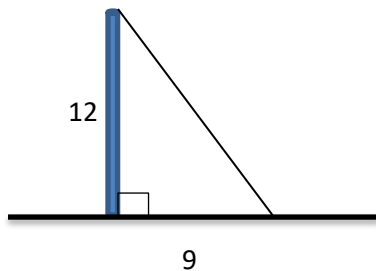
14.



[15-18] Solve the following using either the Pythagorean Theorem, Special Right Triangles, or Trigonometric ratios.

15. Jed is building a roof for his shed. The highest point of the roof will be 3 feet higher than the top of the shed. The slanted roof will be 7 feet long. What is the measure of the angle formed by the top of the shed and the slanted roof?

16. How long must a wire be to reach from the top of a 12-meter telephone pole to a point on the ground 9 meters from the base of the pole?



17. A 15-meter ladder is leaning against a wall. The bottom of the ladder makes a 60° angle with the ground. How high up on the wall does the ladder reach?

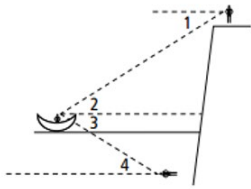
18. A repairman leans the top of an 8 foot ladder against the top of a stone wall. The base of the ladder is 5.5 feet from the wall. About how tall is the wall? **Round to the nearest tenth of a foot.**

Math 2 Unit 7 Worksheet 5
Angles of Elevation and Depression

Name: _____
 Date: _____ Per: _____

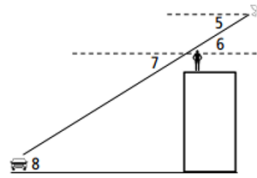
[1-2] Using the given figures, answer parts a, b, and c.

1.



- a) Which angles are angles of elevation? _____
 b) Which angles are angles of depression? _____
 c) If the horizontal lines are parallel, which pairs of angles must be congruent? _____

2.



- a) Which angles are angles of elevation? _____
 b) Which angles are angles of depression? _____
 c) If the horizontal lines are parallel, which pairs of angles must be congruent? _____

[3-8] Sketch the figure for each problem and use trigonometry to solve for the unknown value(s). Express each length to the nearest tenth and each angle to the nearest whole degree. Show valid and appropriate work.

3. At a certain time, a post 6 ft. tall casts a 3 ft. shadow. What is the angle of elevation of the sun?

4. From a point 80 m from the base of a tower, the angle of elevation to the tip of the tower is 28° . How tall is the tower?

5. A ladder that is 20 ft. long is leaning against the side of a building. If the angle formed between the ladder and the ground is 75° . How far is the bottom of the ladder from the base of the building?

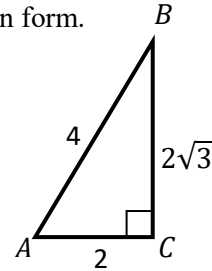
6. A person in a lighthouse 22 m above sea level sights a buoy in the water. If the angle of depression to the buoy is 25° , how far from the base of the lighthouse is the buoy?

7. An observer at the top of a building sees a car on the road below. The angle of depression to the car is 28° . If the car is about 50 m from the building when it is seen, how tall is the building?

8. A kite is flying at an angle of elevation of about 55° . Ignoring the sag in the string, find the height of the kite if 85 m of string have been let out.

[9-14] Using the triangle, find the value of each trigonometric ratio in reduced fraction form.

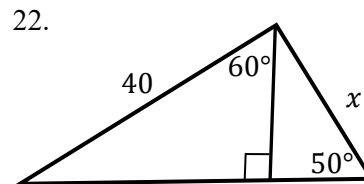
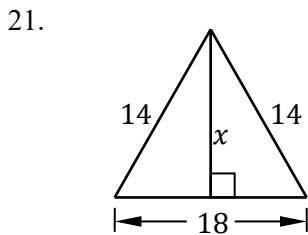
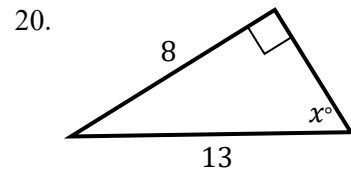
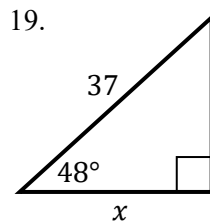
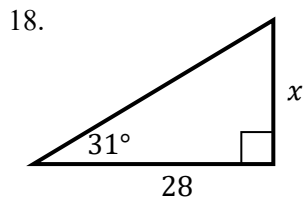
9. $\sin A =$ _____ 10. $\sin B =$ _____
 11. $\cos B =$ _____ 12. $\cos A =$ _____
 13. $\sin 60 \approx$ _____ 14. $\cos 30 \approx$ _____



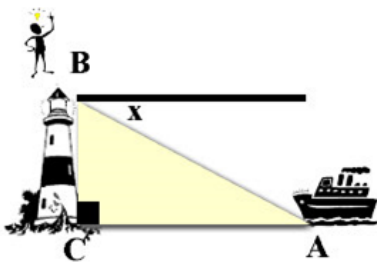
[15-17] Using a scientific calculator or a trig table, complete the following statements.

15. $\cos 60^\circ \approx$ _____ 16. $\sin 30^\circ \approx$ _____ 17. $\tan 14^\circ \approx$ _____

[18-23] Solve for x using trigonometry or other mathematical methods. Show valid and appropriate work. Express each length to the nearest tenth and each angle to the nearest whole degree.



23. A person in a lighthouse 63 m above sea level sights a ship out at sea. If the angle of depression to the ship is 15° how far is the boat from the base of the lighthouse to the nearest meter?

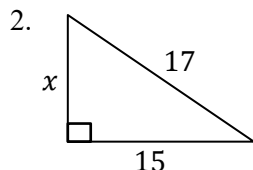
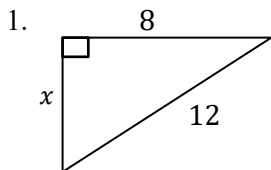


Math 2 Unit 7 Review Worksheet

Name: _____

Date: _____ **Per:** _____

[1-2] Find the value of x . Show all work and leave answers in simplified radical form.



1. _____

2. _____

3. The lengths of the two legs of a right triangle are $2\sqrt{3}$ and 5. What is the length of the hypotenuse?

3. _____

[4-5] State whether a triangle formed with the given side lengths is a right triangle. Show all work.

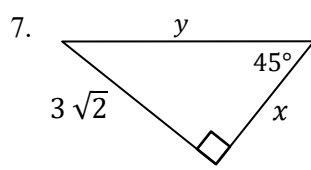
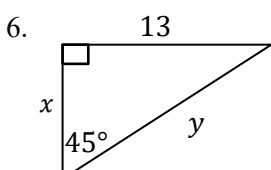
4. 8, 17, 15

5. 4, 10, 12

4. _____

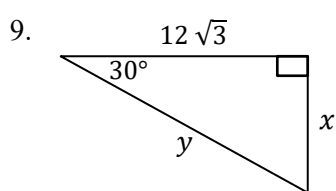
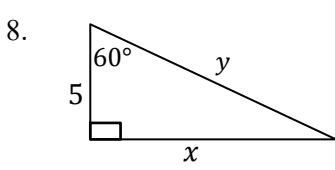
5. _____

[6-9] Find the missing lengths. Show all work and leave answers in simplified radical form.



6. _____

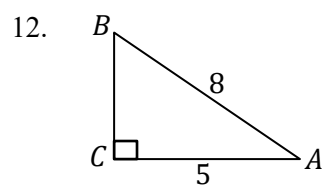
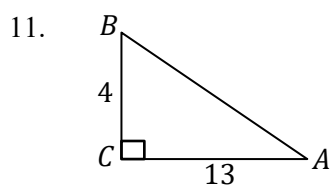
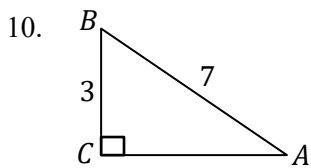
7. _____



8. _____

9. _____

[10-12] Find the measure of $\angle A$ to the nearest degree.

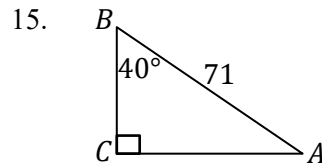
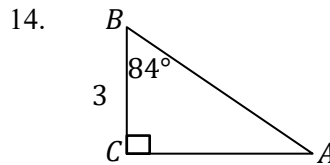
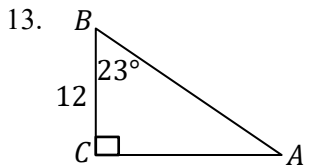


10. _____

11. _____

12. _____

[13-15] Find the length of AC rounded to the nearest tenth.



13. _____

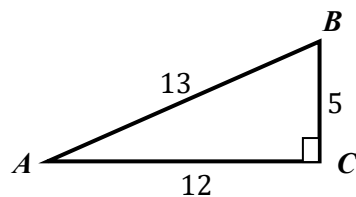
14. _____

15. _____

[16-21] Set up each of the equations without solving and give the letter answer(s).

16. Determine which of **all** the following equations are true.

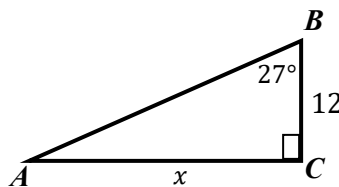
- A. $\sin A = \frac{13}{5}$
- B. $\sin B = \frac{12}{13}$
- C. $\cos A = \frac{5}{13}$
- D. $\cos B = \frac{5}{13}$



16. _____

17. Which equation could be used to find x in $\triangle ABC$?

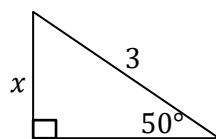
- A. $x = \frac{12}{\sin 27^\circ}$
- B. $x = 12 \cos 27^\circ$
- C. $x = 12 \tan 27^\circ$
- D. None of These



17. _____

18. Which expression can be used to find the value of x ?

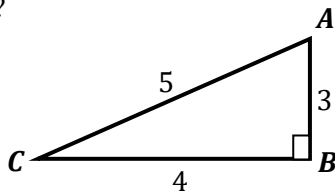
- A. $x = \frac{\sin 50^\circ}{3}$
- B. $x = \frac{3}{\sin 50^\circ}$
- C. $x = \sin 150^\circ$
- D. $x = 3 \sin 50^\circ$



18. _____

19. Which of the following equals $\sin A$?

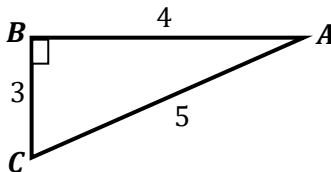
- A. $\sin C$
- B. $\cos A$
- C. $\cos C$
- D. $\tan A$



19. _____

20. Which of the following equals $\sin A$?

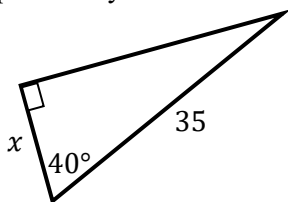
- A. $\tan A$
- B. $\sin C$
- C. $\cos C$
- D. $\cos A$



20. _____

21. Identify all equation(s) that are set up correctly to find x .

- A. $\cos 40^\circ = \frac{x}{35}$
- B. $\tan 40^\circ = \frac{x}{35}$
- C. $\cos 50^\circ = \frac{x}{35}$
- D. $\sin 50^\circ = \frac{x}{35}$
- E. $\sin 40^\circ = \frac{x}{35}$



21. _____

[22-25] Use the given information to draw a diagram and find the requested information.

22. A television screen measures approximately 15.5 inches high and 19.5 inches wide. A television is advertised by giving the approximate length of the diagonal of its screen. How should this television be advertised?

22. _____

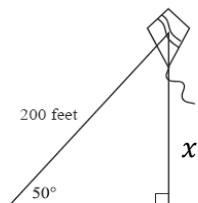
23. A tree casts a shadow that is 22 m long at a certain time of day. The angle of elevation to the sun from the tip of the shadow is 47° . What is the height of the tree?

23. _____

24. A ladder 20 feet long is leaning against the side of a building. If the angle formed between the ladder and the ground is 75° , how far is the bottom of the ladder from the base of the building?

24. _____

25.



25. _____