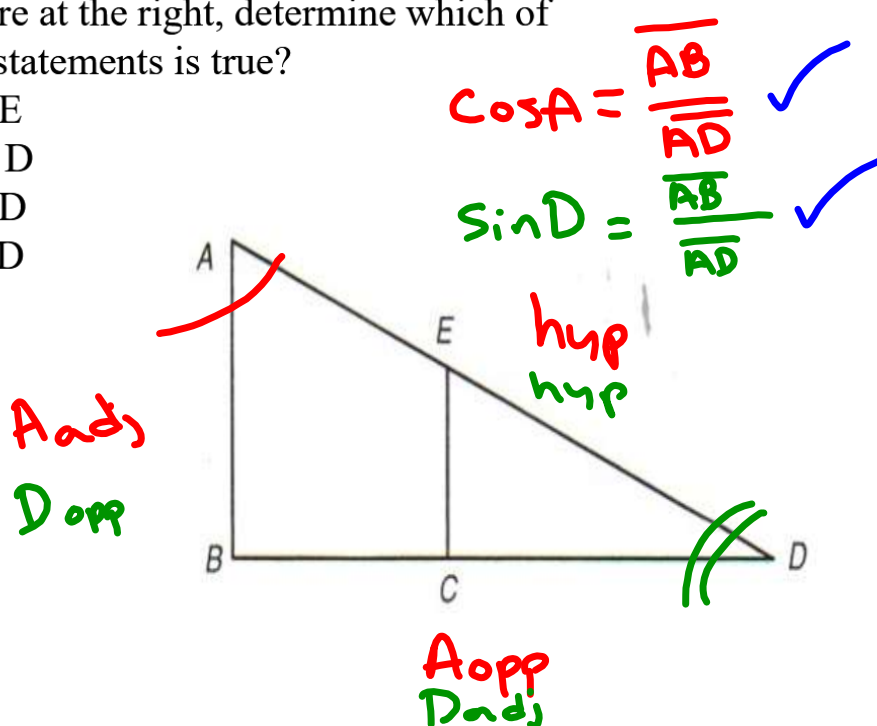


Using the figure at the right, determine which of the following statements is true?

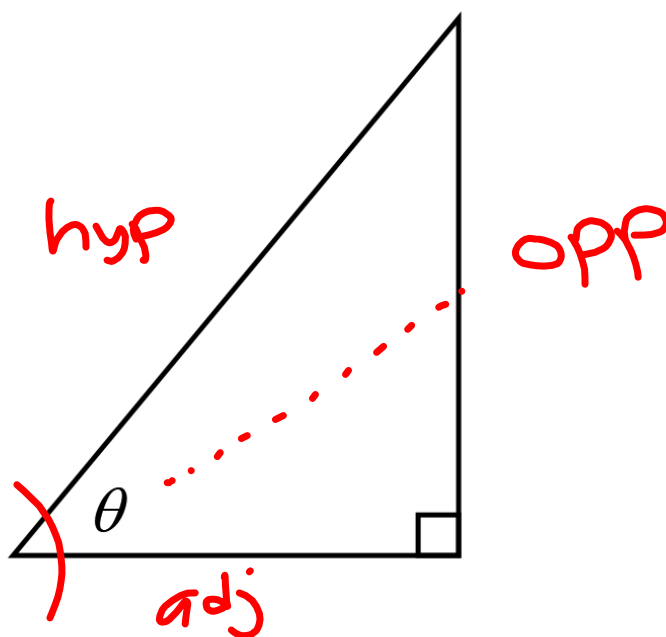
- A. $\cos A = \sin E$
- B. $\cos A = \sin D$
- C. $\cos E = \tan D$
- D. $\tan A = \tan D$



$$\sin(\theta) = \frac{O}{H}$$

$$\cos(\theta) = \frac{A}{H}$$

$$\tan(\theta) = \frac{O}{A}$$



Finding a missing angle.
*(Figuring out which ratio to use and an
inverse trig button.)*

Ex: 1 Figure out which ratio to use. Find x . Round to the nearest tenth.

① Label yo' triangle

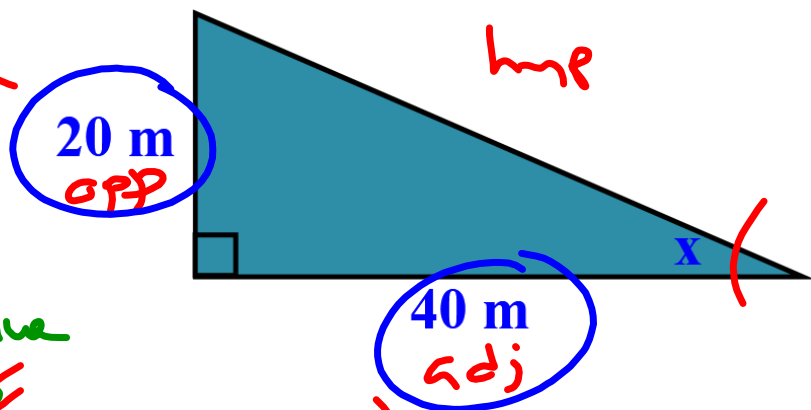
② Circle yo' key pieces

③ Trig & Solve

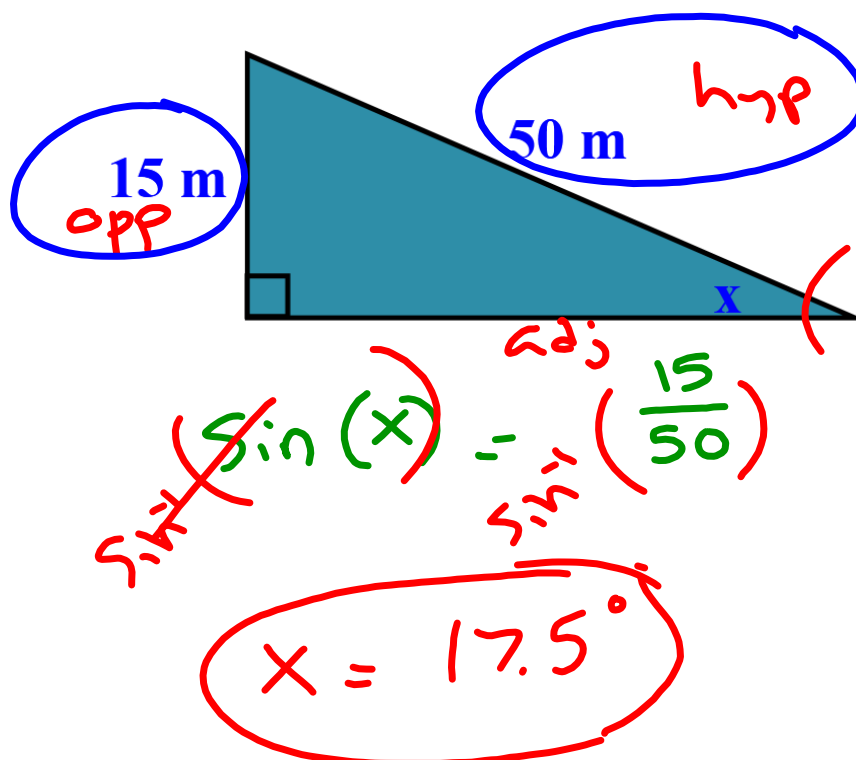
~~S~~ ~~H~~ ~~C~~ ~~H~~ ~~T~~ ~~A~~

$$\cancel{\tan}(x) = \cancel{\tan}\left(\frac{20}{40}\right)$$

$$x = 26.6^\circ$$

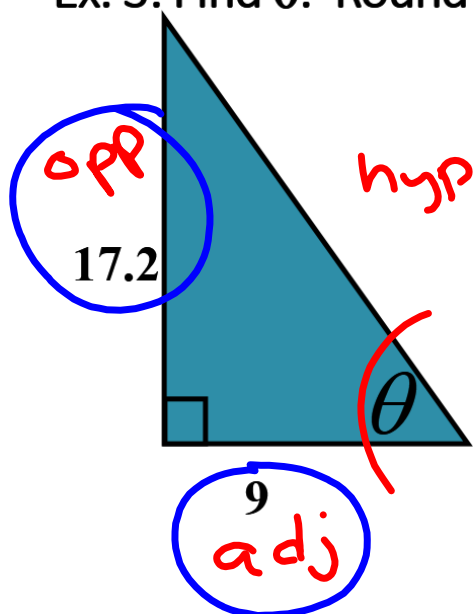


Ex: 2 Figure out which ratio to use. Find x . Round to the nearest tenth.



Ex. 3: Find θ . Round to the nearest degree.

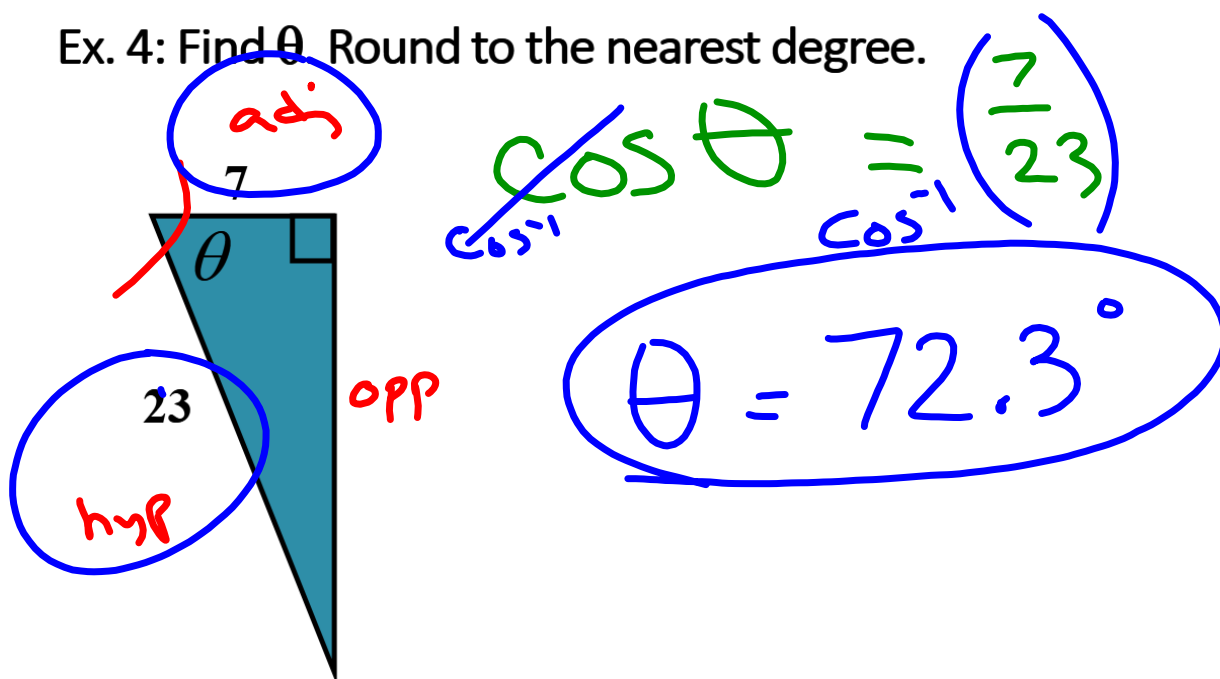
S^oH^oC^oA^oT^oA^o



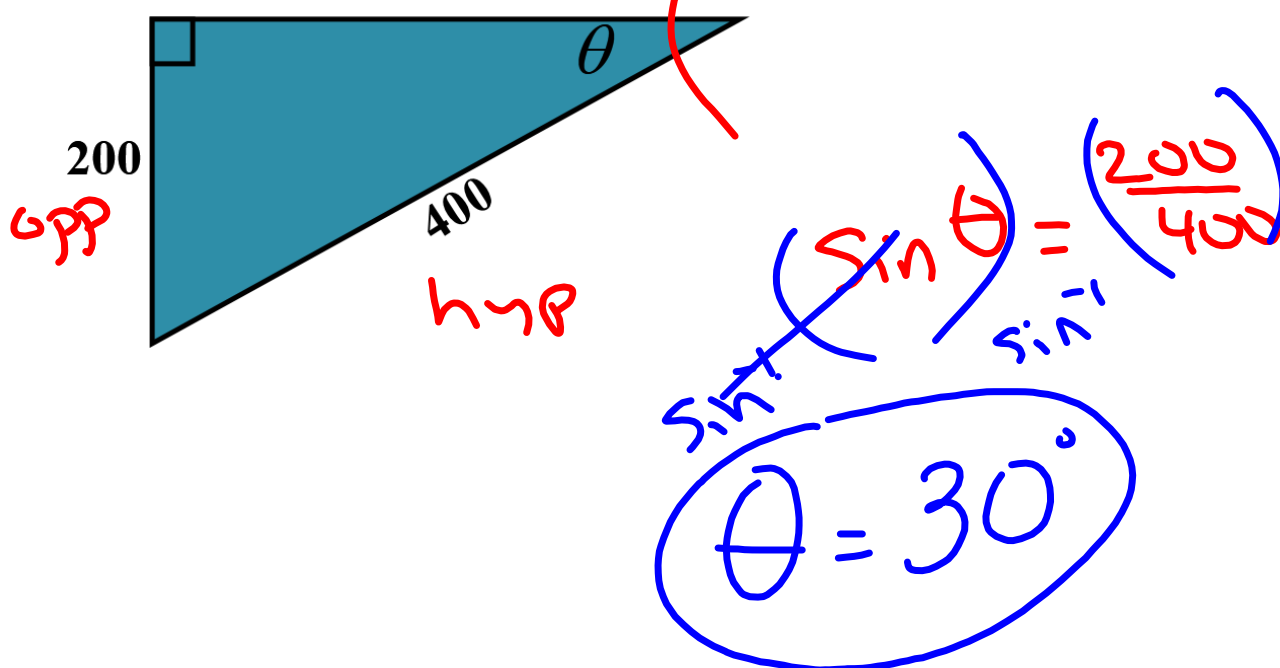
$$\cancel{\sin} \theta = \frac{\cancel{\text{opp}}}{\text{hyp}} \quad \tan \theta = \frac{17.2}{9}$$

$$\theta = 62.4^\circ \approx 62^\circ$$

Ex. 4: Find θ . Round to the nearest degree.



Ex. 5: Find θ . Round to the nearest degree.



Geometry

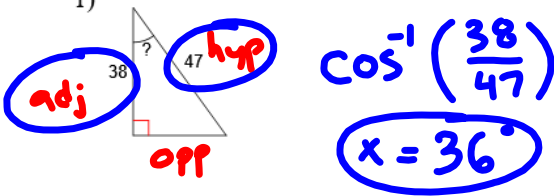
Name _____

Trigonometry: Finding Angle Measures

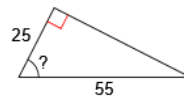
Date _____ Period _____

Find the measure of the indicated angle to the nearest degree.

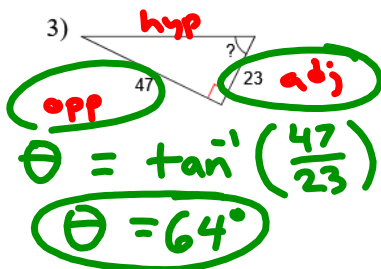
1)



2)



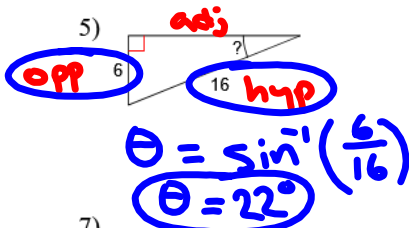
3)



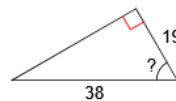
4)



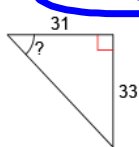
5)



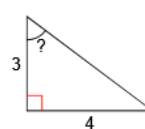
6)



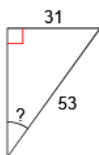
7)



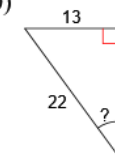
8)



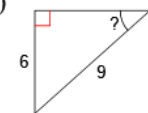
9)



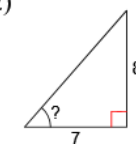
10)



11)



12)



Answers to Trigonometry: Finding Angle Measures

- 1) 36°
- 5) 22°
- 9) 36°

- 2) 63°
- 6) 60°
- 10) 36°

- 3) 64°
- 7) 47°
- 11) 42°

- 4) 29°
- 8) 53°
- 12) 49°

Geometry

Name _____ **trig(angle)=ratio**

Use your calculator to find the value of the following round to the nearest tenth.

- | | | |
|--------------------------------------|--------------------------------------|---------------------------------------|
| 1. $\sin 20^\circ = \underline{.3}$ | 2. $\cos 80^\circ = \underline{.2}$ | 3. $\tan 35^\circ = \underline{.7}$ |
| 4. $\sin 51^\circ = \underline{.8}$ | 5. $\cos 17^\circ = \underline{1.0}$ | 6. $\tan 39^\circ = \underline{.8}$ |
| 7. $\sin 43^\circ = \underline{.7}$ | 8. $\cos 26^\circ = \underline{.9}$ | 9. $\tan 62^\circ = \underline{1.9}$ |
| 10. $\sin 18^\circ = \underline{.3}$ | 11. $\cos 73^\circ = \underline{.3}$ | 12. $\tan 84^\circ = \underline{9.5}$ |

Find the measure of angle A to the nearest degree.

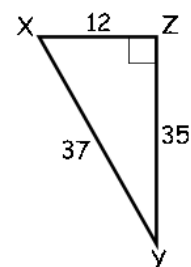
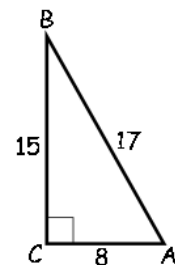
- | | |
|--|--|
| 13. $\sin A = 0.4695$ $A = \underline{28^\circ}$ | 14. $\cos A = 0.9511$ $A = \underline{18^\circ}$ |
| 15. $\cos A = 0.3762$ $A = \underline{68^\circ}$ | 16. $\sin A = 0.9751$ $A = \underline{77^\circ}$ |
| 17. $\tan A = 0.4245$ $A = \underline{23^\circ}$ | 18. $\cos A = 0.8835$ $A = \underline{28^\circ}$ |
| 19. $\sin A = 0.6939$ $A = \underline{44^\circ}$ | 20. $\tan A = 4.0940$ $A = \underline{76^\circ}$ |
| 21. $\tan A = 0.3788$ $A = \underline{21^\circ}$ | 22. $\sin A = 0.8384$ $A = \underline{57^\circ}$ |
| 23. $\sin A = 0.0710$ $A = \underline{4^\circ}$ | 24. $\tan A = 1.2511$ $A = \underline{51^\circ}$ |

For each of the following find the trigonometric ratio, and the measure in degrees of the given angle.

- | | |
|--------------|-------------------|
| | RATIO |
| 25. $\sin A$ | $= \frac{15}{17}$ |
| 26. $\cos A$ | $= \frac{8}{17}$ |
| 27. $\tan A$ | $= \frac{15}{8}$ |
| 28. $\sin B$ | $= \frac{8}{17}$ |
| 29. $\cos B$ | $= \frac{15}{17}$ |
| 30. $\tan B$ | $= \frac{8}{15}$ |
| 31. $\sin X$ | $= \frac{35}{37}$ |
| 32. $\cos X$ | $= \frac{12}{37}$ |
| 33. $\tan X$ | $= \frac{35}{12}$ |
| 34. $\sin Y$ | $= \frac{35}{37}$ |
| 35. $\cos Y$ | $= \frac{12}{37}$ |
| 36. $\tan Y$ | $=$ |

- | | |
|----|----------------------------|
| | DEGREES |
| A= | $\underline{61.93^\circ}$ |
| A= | $\underline{61.93^\circ}$ |
| A= | $\underline{61.93^\circ}$ |
| B= | $\underline{28.07^\circ}$ |
| B= | $\underline{28.07^\circ}$ |
| B= | $\underline{28.07^\circ}$ |
| X= | $\underline{71.08^\circ}$ |
| X= | $\underline{71.08^\circ}$ |
| X= | $\underline{71.08^\circ}$ |
| Y= | $\underline{108.92^\circ}$ |
| Y= | $\underline{108.92^\circ}$ |
| Y= | $\underline{108.92^\circ}$ |

Wow!



Geometry

Name _____

Find these trigonometric values.

- | | | | | | |
|--------------------|--------------|--------------------|--------------|--------------------|--------------|
| 1. $\sin 65^\circ$ | <u>.9063</u> | 2. $\cos 18^\circ$ | <u>.9511</u> | 3. $\tan 35^\circ$ | <u>.7002</u> |
| 4. $\cos 72^\circ$ | <u>.3090</u> | 5. $\tan 10^\circ$ | <u>.1763</u> | 6. $\cos 40^\circ$ | <u>.7660</u> |

Find angle A.

- | | | | | | |
|------------------------|------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|
| 7. $\cos A = 0.3420$ | <u>70°</u> | 8. $\sin A = 0.5150$ | <u>31°</u> | 9. $\tan A = 0.7536$ | <u>37°</u> |
| 10. $\tan A = 11.4301$ | <u>85°</u> | 11. $\cos A = 0.6428$ | <u>50°</u> | 12. $\sin A = 0.9781$ | <u>78°</u> |

Find angle A to the nearest degree.

- | | | | | | |
|-----------------------|------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|
| 13. $\tan A = 4.2274$ | <u>77°</u> | 14. $\sin A = 0.5328$ | <u>32°</u> | 15. $\cos A = 0.9740$ | <u>13°</u> |
| 16. $\cos A = 0.5630$ | <u>56°</u> | 17. $\tan A = 0.2947$ | <u>16°</u> | 18. $\sin A = 0.7815$ | <u>51°</u> |

Show the expression to solve for the variable (ex. $x = 15/\sin 43^\circ$). Then, solve the triangle problems. Round to the nearest tenth.

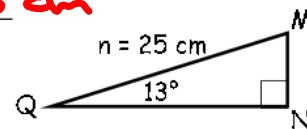
19. $D = 36^\circ$ and $e = 45$ cm.

Find f .

$\cos(36) = \frac{f}{45}$
 $f = 45 \cdot \cos(36)$
 $f = 36.4$ cm

20. $Q = 13^\circ$ and $n = 25$ cm.

Find q . 5.6 cm



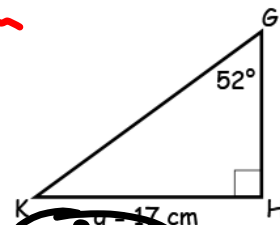
21. $s = 9$ cm and $r = 25$ cm.

Find S . 19.8°



22. $G = 52^\circ$ and $g = 17$ cm.

Find h . 21.6 cm



Solve:

23. A wire runs from a point on the ground to the top of a 24-ft flagpole. The angle of elevation of the wire is 60° . How long is the wire?

Pole 24ft
wire
 60°
 $\sin(60) = \frac{24}{x}$
 $x = \frac{24}{\sin(60)}$
 $x = 27.7$ ft

24. A 30-ft ladder is placed against a wall so that its angle of elevation is 45° . How far from the ground is the top of the ladder?

30ft
 45°
 $\sin(45) = \frac{x}{30}$
 $x = 30 \cdot \sin(45) = 21.2$
21.2 ft

25. A kite is flown with 240 yards of string. The angle of elevation of the string is 55° . How high above the ground is the kite?

196.6 yd