

8.3-8.4 Trigonometry

Day 56

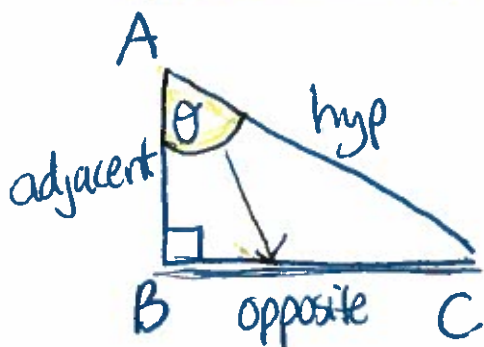
① If you know 2 sides on a Δ , use Pythagorean Theorem to Find the 3rd side.

② If you have a $30^\circ-60^\circ-90^\circ \Delta$, and you know 1 side, you use shortcuts to Find the other sides.

③ If you have a $45^\circ-45^\circ-90^\circ \Delta$ and you know 1 side, you use shortcuts to Find the other 2 sides.

$$\begin{aligned} \text{leg} \cdot \sqrt{2} &= \text{hyp} \\ \text{hypo} \div \sqrt{2} &= \text{Leg} \end{aligned}$$

④ If you know 1 acute angle in a right Δ , then we use sine, cosine or tangent to Find the other missing sides. We set up proportions to Find sides.



$$\sin A = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{BC}{AC}$$

$$\cos A = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{AB}{AC}$$

$$\tan A = \frac{\text{opposite}}{\text{adjacent}} = \frac{BC}{AB}$$

$$\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{1\sqrt{2}}{2}$$

Name: _____

Why Did the Saltine Lock Itself in the Bank Vault?

TO ANSWER THIS QUESTION, FOLLOW THESE INSTRUCTIONS:

For each exercise, select the correct ratio from the four choices given. Write the letter of the correct choice in the box that contains the number of the exercise.

Reduce

$$\frac{5}{13} = \sin A \quad \textcircled{1} \sin A \frac{5}{13} \quad \textcircled{T} \frac{12}{13} \quad \textcircled{A} \frac{5}{13}$$

$$\frac{12}{13} = \cos A \quad \textcircled{2} \cos A \frac{5}{13} \quad \textcircled{L} \frac{13}{5} \quad \textcircled{E} \frac{5}{12}$$

$$\frac{5}{12} = \tan A \quad \textcircled{3} \tan A \frac{5}{13} \quad \textcircled{U} \frac{5}{3} \quad \textcircled{B} \frac{4}{5}$$

$$\frac{12}{13} = \sin B \quad \textcircled{4} \sin B \frac{5}{13} \quad \textcircled{M} \frac{13}{5} \quad \textcircled{A} \frac{5}{13}$$

$$\frac{5}{13} = \cos B \quad \textcircled{5} \cos B \frac{5}{13} \quad \textcircled{C} \frac{12}{13} \quad \textcircled{D} \frac{12}{5}$$

$$\frac{12}{13} = \tan B \quad \textcircled{6} \tan B \frac{5}{13} \quad \textcircled{N} \frac{15}{17}$$

$$A = \frac{1}{3} \quad \textcircled{7} \sin A \frac{5}{13} \quad \textcircled{A} \frac{1}{3} \quad \textcircled{O} \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

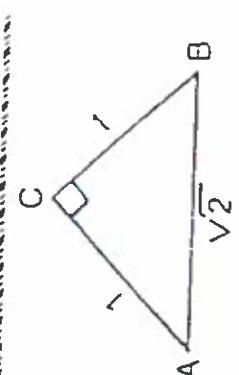
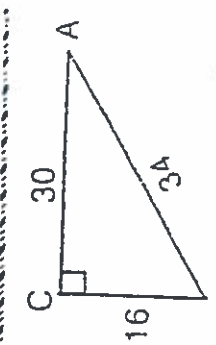
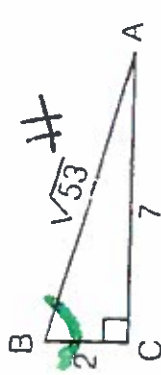
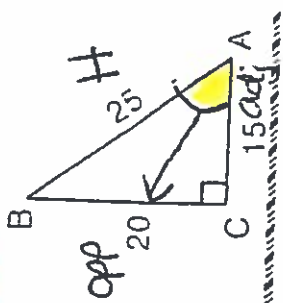
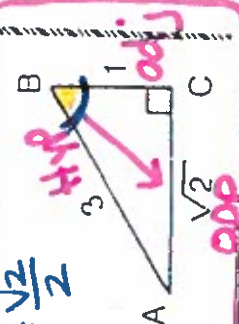
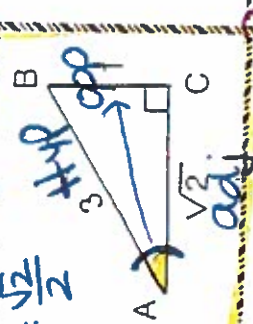
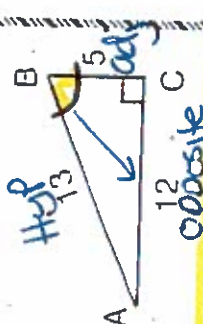
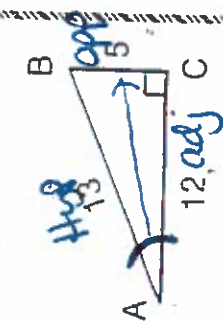
$$E = \frac{\sqrt{2}}{3} \quad \textcircled{8} \cos A \frac{5}{13} \quad \textcircled{H} \frac{3}{1} \quad \textcircled{E} \frac{\sqrt{2}}{3}$$

$$O = \frac{\sqrt{2}}{2} \quad \textcircled{9} \tan A \frac{5}{13} \quad \textcircled{S} \frac{8}{17}$$

$$H = \frac{\sqrt{2}}{3} \quad \textcircled{10} \sin B \frac{5}{13} \quad \textcircled{T} \frac{\sqrt{2}}{1} \quad \textcircled{S} \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$E = \frac{1}{3} \quad \textcircled{11} \cos B \frac{5}{13} \quad \textcircled{E} \frac{1}{3} \quad \textcircled{I} \frac{\sqrt{2}}{3}$$

$$T = \frac{\sqrt{2}}{1} \quad \textcircled{12} \tan B \frac{5}{13} \quad \textcircled{L} \frac{\sqrt{2}}{1} \quad \textcircled{F} 1$$



$$\textcircled{13} \sin A \frac{5}{13} \quad \textcircled{A} \frac{4}{3} \quad \textcircled{E} \frac{3}{5}$$

$$\textcircled{14} \cos A \frac{5}{13} \quad \textcircled{U} \frac{5}{3} \quad \textcircled{B} \frac{4}{5}$$

$$\textcircled{15} \tan A \frac{5}{13} \quad \textcircled{W} \frac{7}{\sqrt{53}} \quad \textcircled{R} \frac{2}{7}$$

$$\textcircled{16} \sin B \frac{5}{13} \quad \textcircled{C} \frac{2}{\sqrt{53}} \quad \textcircled{T} \frac{7}{2}$$

$$\textcircled{17} \cos B \frac{5}{13} \quad \textcircled{K} \frac{8}{15} \quad \textcircled{H} \frac{17}{8}$$

$$\textcircled{18} \tan B \frac{5}{13} \quad \textcircled{S} \frac{8}{17} \quad \textcircled{N} \frac{15}{17}$$

$$\textcircled{19} \sin A \quad \textcircled{R} \frac{1}{\sqrt{2}} \quad \textcircled{R} \frac{1}{\sqrt{2}}$$

$$\textcircled{20} \cos A \quad \textcircled{L} \frac{\sqrt{2}}{1} \quad \textcircled{F} 1$$

$$\textcircled{21} \tan A$$

$$\textcircled{22} \sin A$$

$$\textcircled{23} \cos A$$

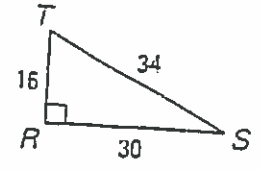
$$\textcircled{24} \tan A$$

10	2	16	5	20	18	14	6	12	9	13	3	7	19	1	24	11	17	22	15	4	21	8	23
	T														A						C		

Sine, Cosine, and Tangent Ratios **Part 1**

Use $\triangle RST$ for Exercises 1-6. Find each ratio in lowest terms.

- 1. $\sin T = 15/17$
- 2. $\tan S$
- 3. $\cos T$
- 4. $\tan T$
- 5. $\cos S$
- 6. $\sin S$



For each triangle, use the information given to find the trigonometric ratio indicated. Write the answer in lowest terms.

- 7. In $\triangle ABC$, $\angle B = 90^\circ$, $\overline{AB} = 12$, and $\overline{BC} = 9$. Find $\cos C$.
- 8. In $\triangle DEF$, $\angle F = 90^\circ$, $\overline{FE} = 24$, and $\overline{DE} = 26$. Find $\sin E$.
- 9. In $\triangle JKL$, $\angle L = 90^\circ$, $\overline{JL} = 10$, and $\overline{JK} = 26$. Find $\tan J$.
- 10. In $\triangle PQV$, $\angle Q = 90^\circ$, $\overline{PV} = 34$, and $\overline{QV} = 30$. Find $\cos P$.
- 11. In $\triangle TAG$, $\angle G = 90^\circ$, $\overline{TA} = 39$, and $\overline{TG} = 15$. Find $\sin T$.
- 12. In $\triangle HOP$, $\angle O = 90^\circ$, $\overline{OP} = 36$, and $\overline{HO} = 15$. Find $\cos P$.

need to draw & label the pictures

Use a calculator or the ~~Table of Trigonometric Ratios on page 581~~ to find each ratio. Round the answer to **four** decimal places.

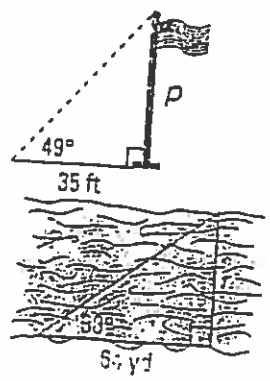
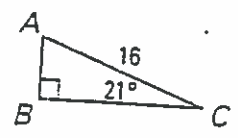
- 13. $\cos 50^\circ$
- 14. $\tan 20^\circ$
- 15. $\cos 37^\circ$
- 16. $\sin 74^\circ$
- 17. $\tan 51^\circ$
- 18. $\sin 15^\circ$
- 19. $\tan 8^\circ$
- 20. $\tan 82^\circ = 7.1154$
- 21. $\sin 44^\circ = 0.6947$
- 22. $\cos 45^\circ = 0.7071$
- 23. $\sin 50^\circ$
- 24. $\cos 25^\circ$

Extra Practice 8.3/8.4 Finding Lengths of Sides in Right Triangles **Part 2**

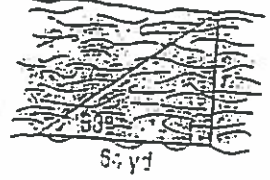
Solve. Round answers to the nearest tenth.

Use $\triangle ABC$ for Exercises 1 and 2.

- 1. Find \overline{AB} .
- 2. Find \overline{BC} .
- 5. Find the height of the flagpole, p .

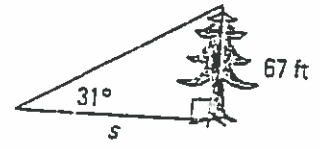
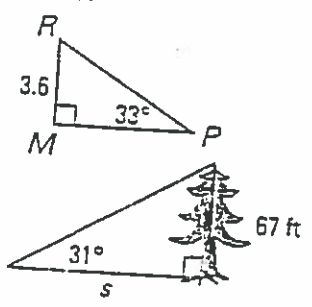


- 7. Find the width of the river, r .

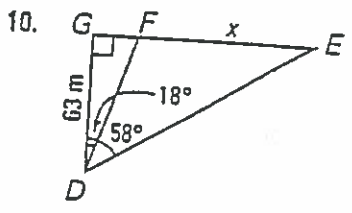
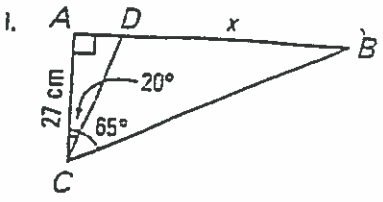


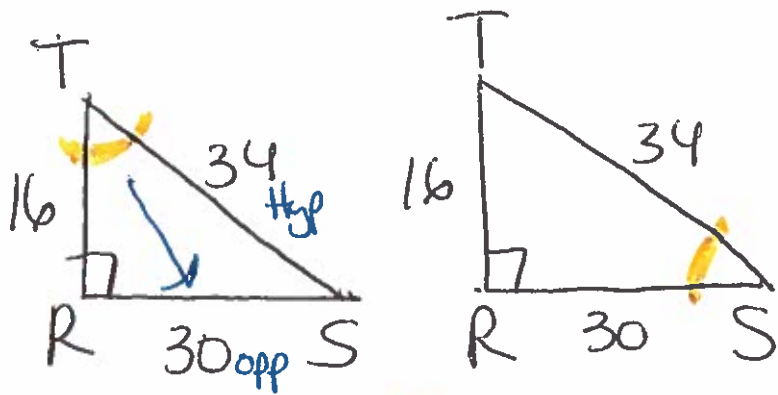
Use $\triangle RPM$ for Exercises 3 and 4.

- 3. Find \overline{RP} .
- 4. Find \overline{MP} .
- 6. Find the length of the tree's shadow, s .
- 8. Find the length of the guy wire, g .



each figure, find the length of x to the nearest tenth.

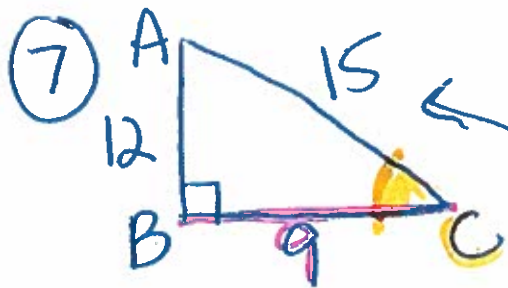




$$\frac{O}{H} \sin T = \frac{30}{34} = \frac{15}{17} \quad \sin S =$$

$$\cos T = \quad \cos S =$$

$$\tan T = \quad \tan S =$$



$$\cos C = \frac{\text{adj}}{\text{hyp}} = \frac{9}{15} = \frac{3}{5}$$

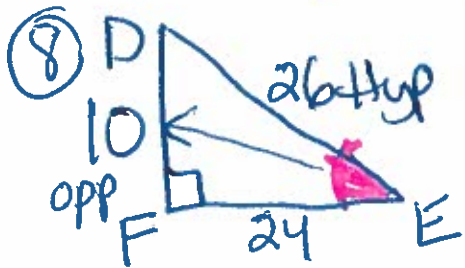
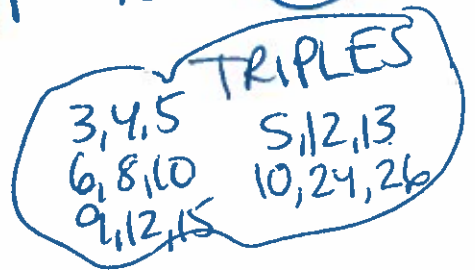
Find

$$9^2 + 12^2 = C^2$$

$$81 + 144 = C^2$$

$$\sqrt{225} = C$$

$$15 = C$$



$$\sin E = \frac{\text{opp}}{\text{hyp}} = \frac{10}{26} = \frac{5}{13}$$

