

# Lesson 12.1 • Trigonometric Ratios

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

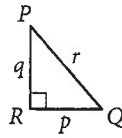
In Exercises 1–4, give each answer as a fraction in terms of  $p$ ,  $q$ , and  $r$ .

1.  $\sin P = \frac{p}{r}$

2.  $\cos P = \frac{q}{r}$

3.  $\tan P = \frac{p}{q}$

4.  $\sin Q = \frac{q}{r}$



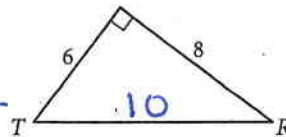
In Exercises 5–8, give each answer as a decimal accurate to the nearest 0.001.

5.  $\sin T = \frac{8}{10} = 0.800$

6.  $\cos T = \frac{6}{10} = 0.600$

7.  $\tan T = \frac{8}{6} = 1.333$

8.  $\sin R = \frac{6}{10} = 0.600$



For Exercises 9–11, solve for  $x$ . Express each answer accurate to the nearest 0.01.

9.  $\cos 64^\circ = \frac{x}{28}$   
 $28 \cos 64^\circ = x$   
 $x \approx 12.27$

10.  $\sin 24^\circ = \frac{12.1}{x}$   
 $x = \frac{12.1}{\sin 24^\circ}$   
 $x \approx 29.75$

11.  $\tan 51^\circ = \frac{x}{14.8}$   
 $14.8 \tan 51^\circ = x$   
 $x \approx 18.28$

For Exercises 12–14, find the measure of each angle to the nearest degree.

12.  $\sin A = 0.9455$   
 $A \approx 71^\circ$

13.  $\tan B = \frac{4}{3}$   
 $B \approx 53^\circ$

14.  $\cos C = 0.8660$   
 $C \approx 30^\circ$

For Exercises 15–17, write a trigonometric equation you can use to solve for the unknown value. Then find the value to the nearest 0.1.

15.  $w \approx 18.0 \text{ cm}$   
 $\sin 40^\circ = \frac{w}{28}$   
 $28 \sin 40^\circ = w$

16.  $x \approx 7.4 \text{ cm}$   
 $\tan 28^\circ = \frac{x}{14}$   
 $14 \tan 28^\circ = x$

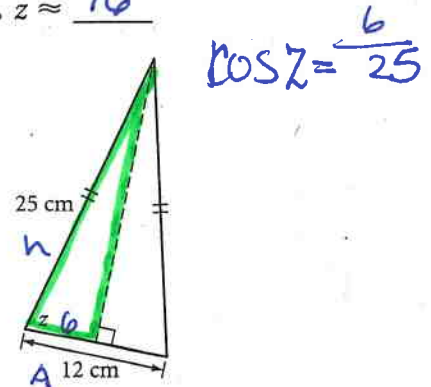
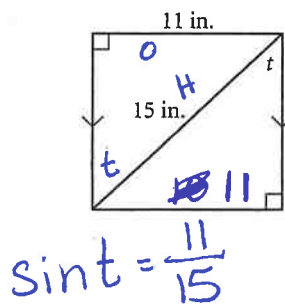
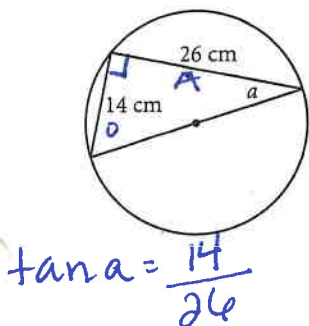
17.  $y \approx 76.3 \text{ cm}$   
 $\cos 17^\circ = \frac{73}{y}$   
 $y = \frac{73}{\cos 17^\circ}$

For Exercises 18–20, find the value of each unknown to the nearest degree.

18.  $a \approx 28^\circ$

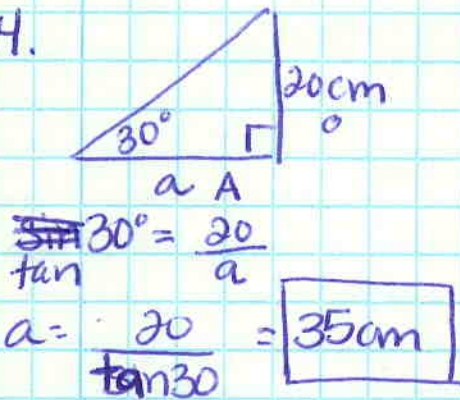
19.  $t \approx 47^\circ$

20.  $z \approx 76^\circ$

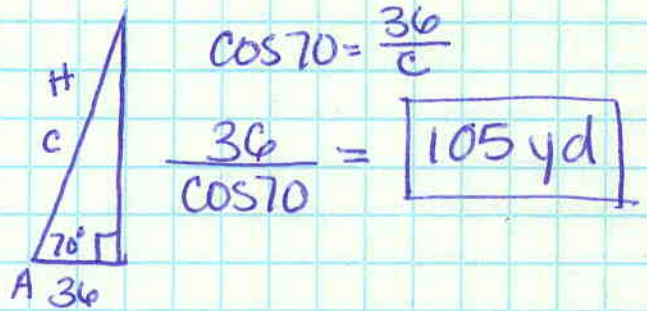


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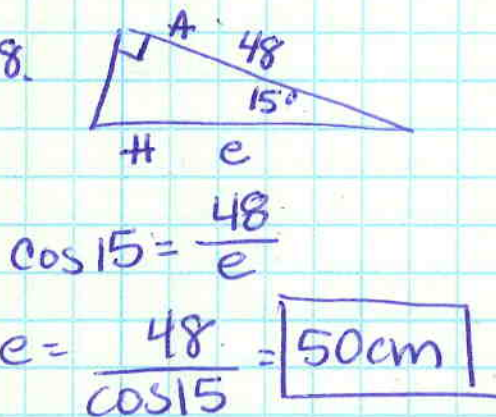
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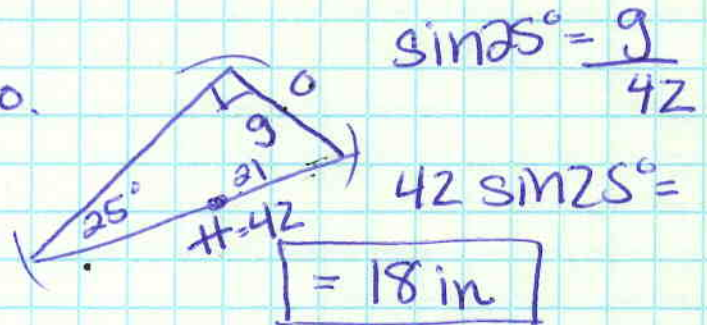
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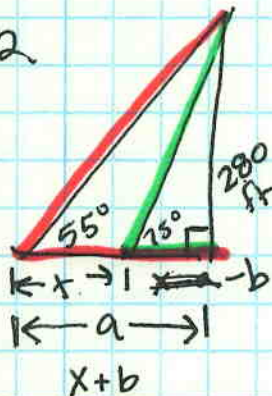
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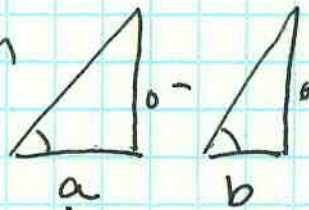
20.



22.



Plan



$$\tan 55^\circ = \frac{280}{a}$$

$$\tan 75^\circ = \frac{280}{b}$$

$$a = \frac{280}{\tan 55^\circ}$$

$$b = \frac{280}{\tan 75}$$

$$196.06$$

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$$75.02 =$$

$$121.04$$