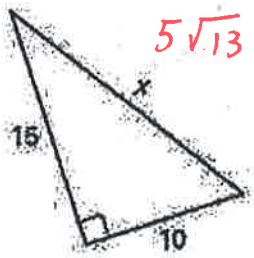
Trig Review: Pythagorean Theorem

Name Answers

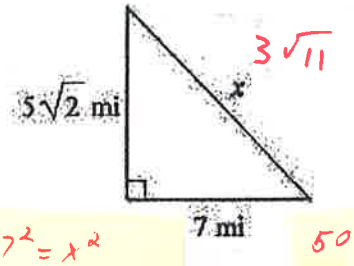
Find the missing length.

1) 

$5\sqrt{13}$

2) 

$18\sqrt{2}$

3) 

$3\sqrt{11}$

$(5\sqrt{2})^2 + 7^2 = x^2$

$5^2\sqrt{2}^2 + 49 = x^2$

$25 \cdot 2 + 49 = x^2$

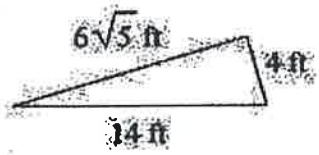
$50 + 49 = x^2$

$99 = x^2$

$\sqrt{99} = x$

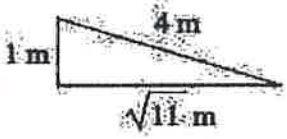
$3\sqrt{11} = x$

Determine whether the given sides could make a right triangle. (Possible bonus: if the triangle is not right, what kind of triangle is it?)

4) 

$(6\sqrt{5})^2 + 4^2 = 14^2$

yes

5) 

$1^2 + \sqrt{11}^2 \neq 4^2$

no

6) 17, 22, 19

$17^2 + 19^2 \neq 22^2$

no

7) $5, 6, \sqrt{11}$

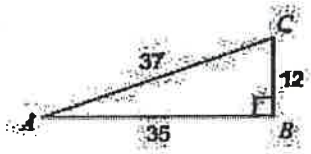
$5^2 + \sqrt{11}^2 = 6^2$

yes

Trig Review: Trig (basics)

Name Answers

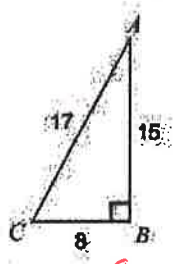
Find sin A, cos A, and tan A.

8) 

$\sin A = \frac{12}{37}$

$\cos A = \frac{35}{37}$

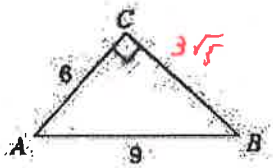
$\tan A = \frac{12}{35}$

9) 

$\sin A = \frac{8}{17}$

$\cos A = \frac{15}{17}$

$\tan A = \frac{8}{15}$

10) 

$9^2 + 6^2 = 9^2$

$9^2 + 36 = 81$

$9^2 = 45$

$9 = \sqrt{45} = 3\sqrt{5}$

$\sin A = \frac{3\sqrt{5}}{9} = \frac{\sqrt{5}}{3}$

$\cos A = \frac{6}{9} = \frac{2}{3}$

$\tan A = \frac{3\sqrt{5}}{6} = \frac{\sqrt{5}}{2}$

11) If $\sin\theta = \frac{4}{5}$, find $\csc\theta$ $\frac{5}{4}$

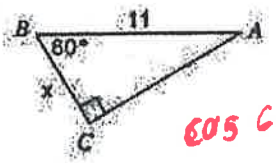
12) If $\tan\theta = 4$, find $\cot\theta$ $\frac{1}{4}$

13) If $\sec\theta = \frac{2\sqrt{3}}{3}$, find $\cos\theta$ $\frac{3}{2\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{3}}{6} = \frac{\sqrt{3}}{2}$

Trig Review: Trig (sides)

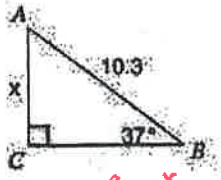
Name Answers

Solve for x. Round to the nearest tenth.

14) 

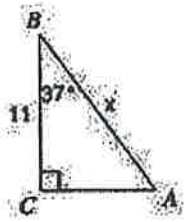
$\cos 60^\circ = \frac{x}{11}$

$x = 5.5$

15) 

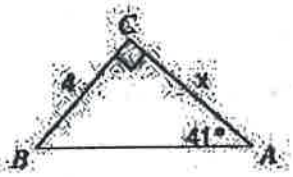
$\sin 37^\circ = \frac{x}{10.3}$

$x = 6.2$

16) 

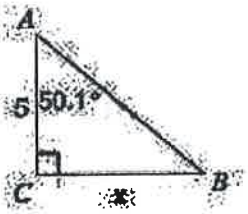
$\cos 37^\circ = \frac{11}{x}$

$x = 13.8$

17) 

$\tan 41^\circ = \frac{4}{x}$

$x = 4.6$

18) 

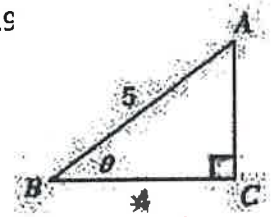
$\tan 50.1^\circ = \frac{x}{5}$

$x = 6.0$

Trig Review: Trig (angles)

Name Answers

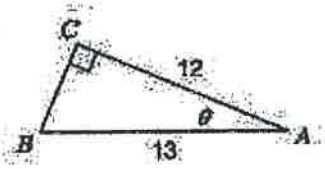
Solve for θ. Round to the nearest whole degree.

19) 

$\cos\theta = \frac{4}{5}$

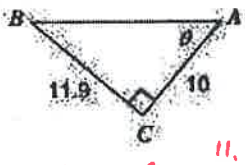
$\cos^{-1}(\cos\theta) = \cos^{-1}\left(\frac{4}{5}\right)$

$\theta = 37^\circ$

20) 

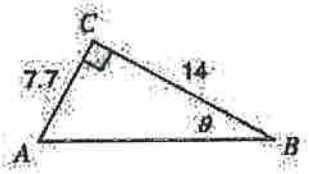
$\cos\theta = \frac{12}{13}$

$\theta = 23^\circ$

21) 

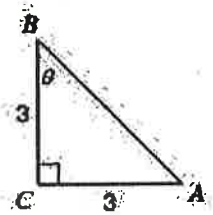
$\tan\theta = \frac{11.9}{10}$

$\theta = 50^\circ$

22) 

$\tan\theta = \frac{7.7}{14}$

$\theta = 29^\circ$

23) 

$\tan\theta = \frac{3}{3}$

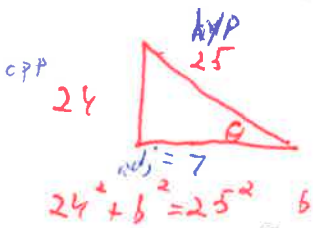
$\theta = 45^\circ$

Trig Review: Switching Ratios

Name Answers

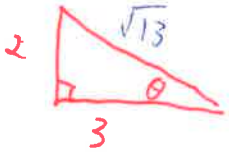
Given one trig ratio, label a right triangle to find the requested ratio.

24) $\sin\theta = \frac{24}{25}$; find $\cos\theta$. $= \frac{adj}{hyp} = \frac{7}{25}$



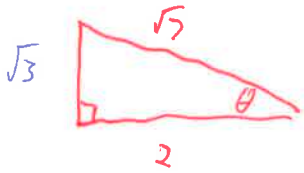
$24^2 + b^2 = 25^2$ $b = 7$

25) $\tan\theta = \frac{2}{3}$; find $\sin\theta$. $= \frac{2}{\sqrt{13}} \cdot \frac{\sqrt{13}}{\sqrt{13}} = \frac{2\sqrt{13}}{13}$



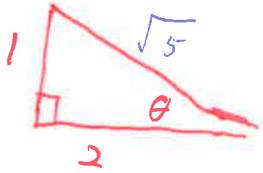
26) $\sec\theta = \frac{\sqrt{7}}{2}$; find $\tan\theta$. $= \frac{\sqrt{3}}{2}$

$\cos\theta = \frac{2}{\sqrt{7}}$



27) $\cot\theta = 2$; find $\csc\theta$.

$\tan\theta = \frac{1}{2}$ $\sin\theta = \frac{1}{\sqrt{5}}$ $\csc\theta = \frac{\sqrt{5}}{1} = \sqrt{5}$

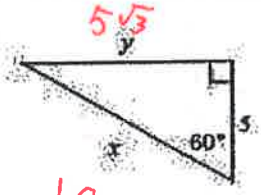


Trig Review: 30-60-90 Triangles

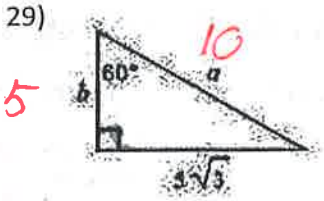
Name Answers

Find the missing side lengths and/or angles. Keep answers in simplest radical form.

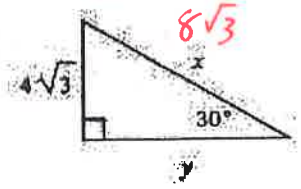
28)



29)

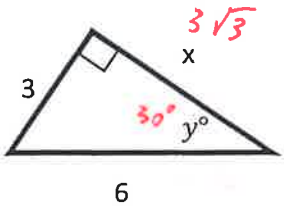


30)



$4\sqrt{3} \cdot \sqrt{3} = 12$

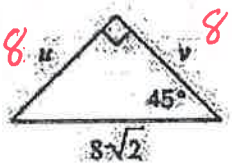
31)



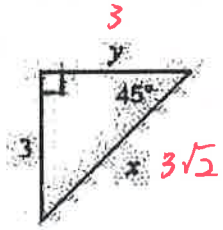
Trig Review: 30-60-90 Triangles

Name Answers

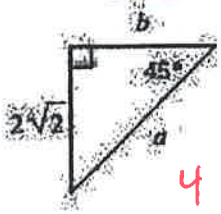
Find the missing side lengths. Keep answers in simplest radical form.

32) 

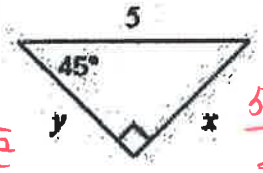
8 8

33) 

3 3√2

34) 

2√2 4

35) 

$\frac{5}{\sqrt{2}} = \frac{5\sqrt{2}}{2}$ $\frac{5\sqrt{2}}{2}$

Trig Review: Rationalize Denominators

Name Answers

Rationalize the denominators and simplify. Answers should be in simplest radical form.

36) $\frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{5}}{5}$

37) $\frac{\sqrt{3}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{\sqrt{15}}{5}$

38) $\frac{\sqrt{3}}{2\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{\sqrt{18}}{2 \cdot 6}$

$= \frac{\sqrt{2 \cdot 3 \cdot 3}}{12}$

$= \frac{3\sqrt{2}}{12} = \frac{\sqrt{2}}{4}$

39) $\frac{5\sqrt{6}}{3\sqrt{15}} = \frac{5\sqrt{2 \cdot 3}}{3\sqrt{3 \cdot 5}} = \frac{5\sqrt{2}}{3\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$

$= \frac{5\sqrt{10}}{3 \cdot 5}$

$= \frac{\sqrt{10}}{3}$

40) $\sqrt{\frac{11}{12}} = \frac{\sqrt{11}}{\sqrt{12}} = \frac{\sqrt{11}}{2\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

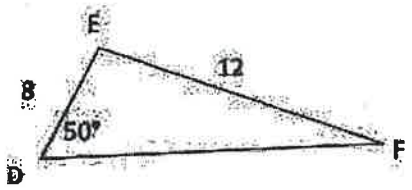
$= \frac{\sqrt{33}}{6}$

Trig Review: Law of Sines

Name Answer

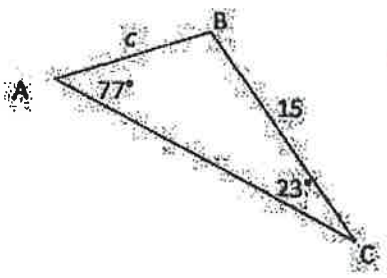
Use the Law of Sines to find the requested side or angle. Round to nearest tenth for sides or degree for angles.

41) Find angle F.



$\frac{\sin 50^\circ}{12} = \frac{\sin F}{8}$ $F = 31^\circ$

42) Find length c.

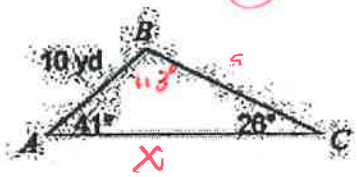


$\frac{\sin 77^\circ}{15} = \frac{\sin 23^\circ}{c}$ $c = 6.0$

43) Find the length of $\overline{AC}$

41+26=67

180−67=

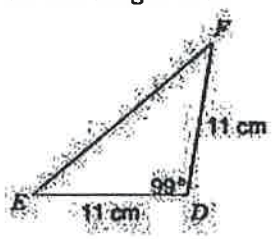


$\frac{\sin 26^\circ}{10} = \frac{\sin 41^\circ}{9} = \frac{\sin 113^\circ}{x}$

$AC = 21.0$

44) Find the length of $\overline{EF}$

Law of cosines works better



$11^2 + 11^2 - 2 \cdot 11 \cdot 11 \cdot \cos 99^\circ = c^2$

$279.8571 = c^2$

$16.7 = c$

Trig Review: Law of Cosines

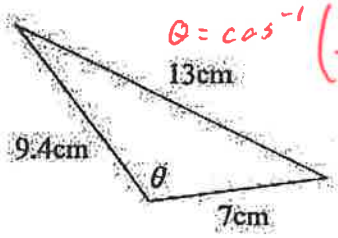
Name Answer

Use the Law of Sines to find the requested side or angle.

45) Find θ

$9.4^2 + 7^2 - 2 \cdot 9.4 \cdot 7 \cdot \cos\theta = 13^2$

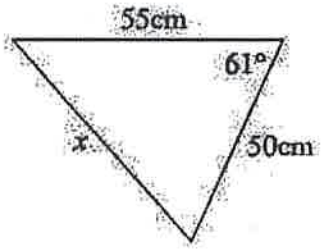
$\theta = \cos^{-1}\left(\frac{13^2 - 9.4^2 - 7^2}{-2(9.4)(7)}\right)$



$\theta = 104^\circ$

46) Find x

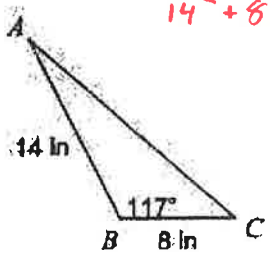
$55^2 + 50^2 - 2 \cdot 55 \cdot 50 \cdot \cos 61^\circ = x^2$



$53.5 = x$

47) Find AC.

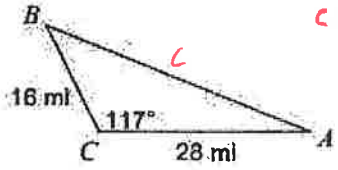
$14^2 + 8^2 - 2 \cdot 14 \cdot 8 \cdot \cos 117^\circ = b^2$



$19.0 = b$

48) Find $m\angle A$. (This may require more than law of cosines.)

$c = 38.0$



$\frac{\sin 117^\circ}{38.0} = \frac{\sin A}{16}$

$A = \sin^{-1}\left(\frac{16 \sin 117^\circ}{38.0}\right)$

$A = 22^\circ$