Geometry Honors Unit 6 (Chapter 8) Test Review

Name Master Ex

SHOW ALL WORK BELOW EACH PROBLEM.

Date _____ Block _____

Simplify each radical expression. Write your answers in simplified radical form.

1. $\sqrt{98} = \frac{7\sqrt{2}}{\sqrt{49}\cdot\sqrt{2}}$

2. $2\sqrt{32} = \frac{8\sqrt{2}}{2\sqrt{16}\sqrt{2}}$

3. $4\sqrt{8} = \frac{8\sqrt{2}}{4\sqrt{4}\sqrt{2}}$

4. $(\sqrt{5})^2 = 5$

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

6. $\sqrt{\frac{5}{2}} = \frac{\sqrt{10}}{2}$

Find the Geometric Mean between each pair of numbers.

7. 8 and 12 $4\sqrt{6}$ (9.8)
$\frac{8}{x} = \frac{x}{12}$ $x = \sqrt{4\cdot2\cdot4\cdot3}$

8. 3 and 15 $3\sqrt{5}$ (11.6)
$\frac{3}{x} = \frac{x}{15}$ $x = \sqrt{3\cdot3\cdot5}$

9. $\frac{4}{5}$ and 2 $\frac{2\sqrt{10}}{5}$ (1.3)
$\frac{\frac{4}{5}}{x} = \frac{x}{2}$ $x = \sqrt{\frac{8}{5}} = \frac{\sqrt{4}\sqrt{2}}{\sqrt{5}}\cdot\frac{\sqrt{5}}{\sqrt{5}}$

Are these the sides of a right triangle, obtuse triangle, or acute triangle? Show your work!

If it is a right triangle, tell whether or not it is a Pythagorean Triple.

10. 5, 12, and 13 $13^2 \quad 5^2+12^2$
$169 = 25+144$ RIGHT - P. T.

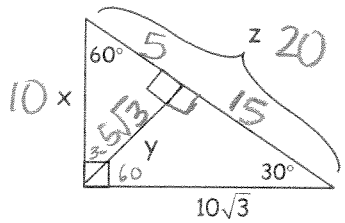
11. 4, 5, and 6 $6^2 \quad 4^2+5^2$
$36 < 16+25$ ACUTE

12. 1, $\sqrt{7}$, and $2\sqrt{2}$ $(2\sqrt{2})^2 \quad 1^2+(\sqrt{7})^2$
$8 = 1+7$ RIGHT

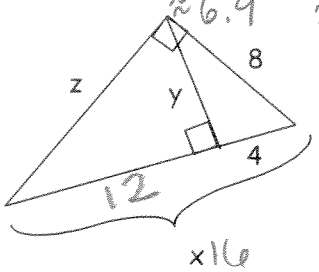
13. 5, 10, and 12 $12^2 \quad 5^2+10^2$
$144 > 25+100$ OBTUSE

Find each side length expressed in <u>simplified radical form</u> AND in <u>decimal form</u> rounded to the tenth.

14. x = 10 y = $5\sqrt{3}$ z = 20

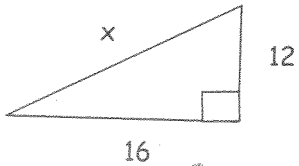


15. x = 16 y = $4\sqrt{3} \approx 6.9$ z = $8\sqrt{3} \approx 13.9$



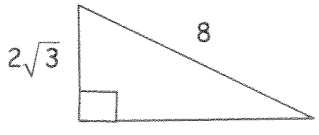
$64 = 4x$
$16 = x$
$z = \sqrt{12\cdot16}$
$\sqrt{4\cdot3\cdot16}$
$y = \sqrt{12\cdot4}$
$\sqrt{3\cdot4\cdot4}$

16. x = 20 P.T.!



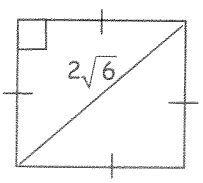
$16^2+12^2 = x^2$
$400 = x^2$

17. x = $2\sqrt{13} \approx 7.2$



$(2\sqrt{3})^2+x^2 = 64$
$12+x^2 = 64$
$x^2 = 52$
$x = \sqrt{52} = \sqrt{4\cdot13}$

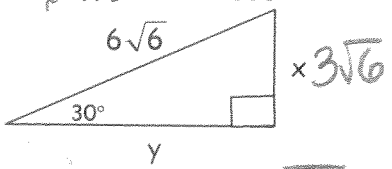
18. x = $2\sqrt{3}$



$\frac{2\sqrt{6}}{\sqrt{2}}$
$2\sqrt{3}$

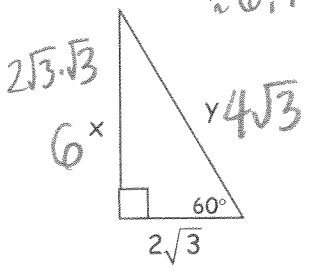
Find each side length expressed in simplified radical form AND in decimal form rounded to the tenth.

19. $x = 3\sqrt{6} \approx 7.3$ $y = 9\sqrt{2} \approx 8.5$

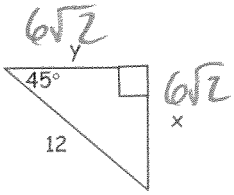


$3\sqrt{6} \cdot \sqrt{3} = 3\sqrt{18}$
$= 3\sqrt{9} \cdot \sqrt{2}$

20. $x = 6$ $y = 4\sqrt{3} \approx 6.9$

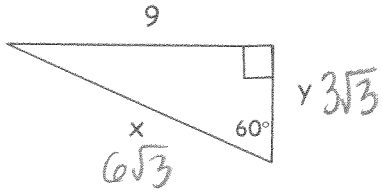


21. $x = 6\sqrt{2} \approx 8.5$ $y = 6\sqrt{2} \approx 8.5$



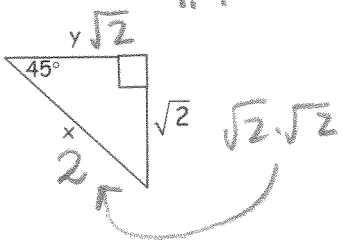
$\frac{12}{\sqrt{2}}$

22. $x = 6\sqrt{3} \approx 10.4$ $y = 3\sqrt{3} \approx 5.2$



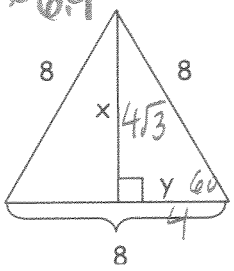
$\frac{9}{\sqrt{3}}$

23. $x = 2$ $y = \sqrt{2} \approx 1.4$

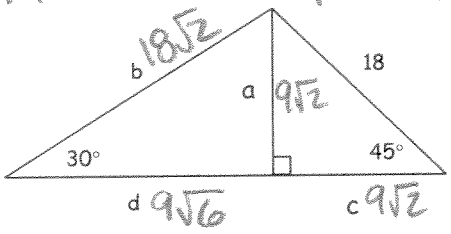


$\sqrt{2} \cdot \sqrt{2}$

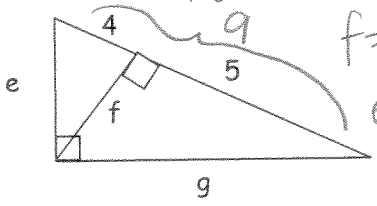
24. $x = 4\sqrt{3} \approx 6.9$ $y = 4$



25. $a = 9\sqrt{2} \approx 12.7$ $b = 18\sqrt{2} \approx 25.5$ $c = 9\sqrt{2} \approx 12.7$ $d = 9\sqrt{6} \approx 22.0$



26. $e = 6$ $f = 2\sqrt{5} \approx 4.5$ $g = 3\sqrt{5} \approx 6.7$



$f = \sqrt{4.5}$
$e = \sqrt{4 \cdot 9}$
$g = \sqrt{5 \cdot 9}$

Write each trigonometric ratio as a fraction in simplest form AND as a decimal rounded to 2 places.

27. $\sin X = \frac{8}{10} = \frac{4}{5} = 0.80$

28. $\cos X = \frac{6}{10} = \frac{3}{5} = 0.60$

29. $\tan X = \frac{8}{6} = \frac{4}{3} = 1.33$

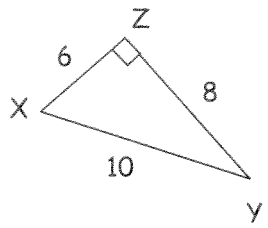
30. What is $m\angle X$? $53°$ 53.1

31. $\sin Y = \frac{6}{10} = \frac{3}{5} = 0.60$

32. $\cos Y = \frac{8}{10} = \frac{4}{5} = 0.80$

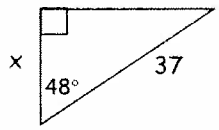
33. $\tan Y = \frac{6}{8} = \frac{3}{4} = 0.75$

34. What is $m\angle Y$? $37°$ 36.9



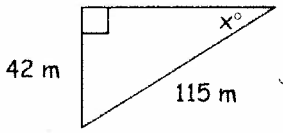
Find the value of x. Round sides to the nearest tenth and angles to the nearest degree.

35. x = 24.8



$\cos 48 = \frac{x}{37}$

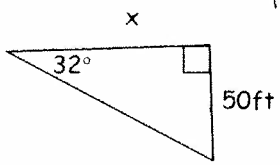
36. x = 21°



$\sin x = \frac{42}{115}$

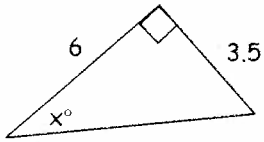
21.4

37. x = 80.0 feet



$\tan 32 = \frac{50}{x}$

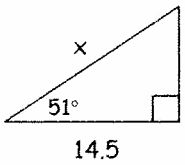
38. x = 30°



$\tan x = \frac{3.5}{6}$

30.3

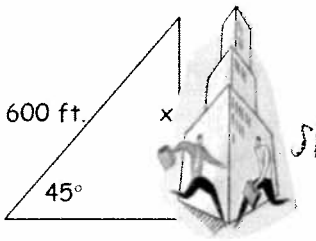
39. x = 23.0



$\cos 51 = \frac{14.5}{x}$

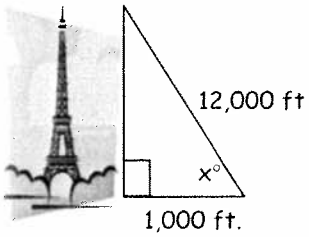
$x = \frac{14.5}{\cos 51}$

40. x = 424.3 feet



$\sin 45 = \frac{x}{600}$

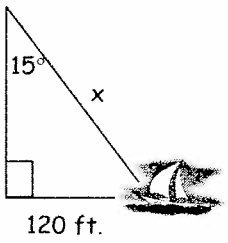
41. x = 85°



$\cos x = \frac{1000}{12000}$

85.2

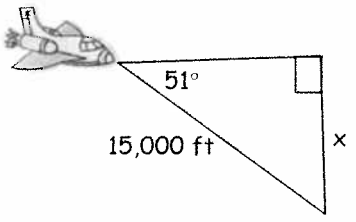
42. x = 463.6 feet



$\sin 15 = \frac{120}{x}$

$x = 120 \div \sin 15$

43. x = 11,657.2 feet



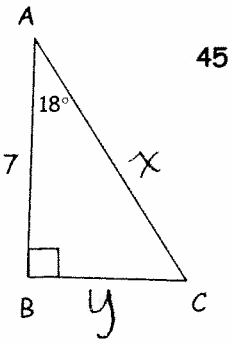
$\sin 51 = \frac{x}{15000}$

Solve each triangle. Show your work below each problem and fill in the blanks with sides rounded to the nearest tenth and angles rounded to the nearest degree.

44. m∠C = 72° (90 − 18)

AC = x 7.4

BC = y 2.3



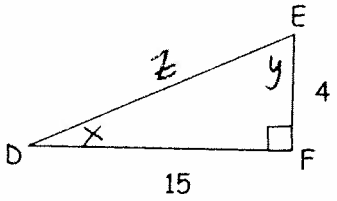
$\tan 18 = \frac{y}{7}$ 2.3

$\cos 18 = \frac{7}{x}$ 7.36

45. m∠D = 15°

m∠E = y 75°

DE = z 15.5



$\tan x = \frac{4}{15}$ 14.93

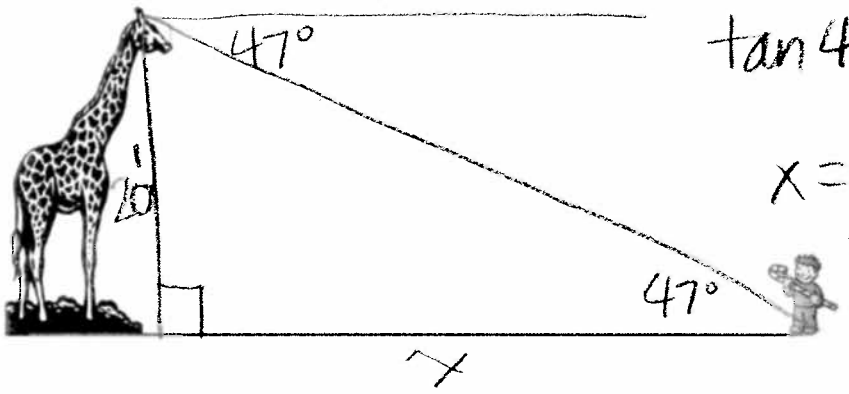
$4^2 + 15^2 = z^2$

$\sqrt{241} = z$

$\tan y = \frac{15}{4}$ 75.06

Solve each word problem. Complete each picture, show your work, and round all answers to the nearest integer.

46. Jacob went to the Norfolk Zoo. The angle of depression from the 20 foot giraffe to Jacob was 47°. How far away from the giraffe's feet was Jacob?



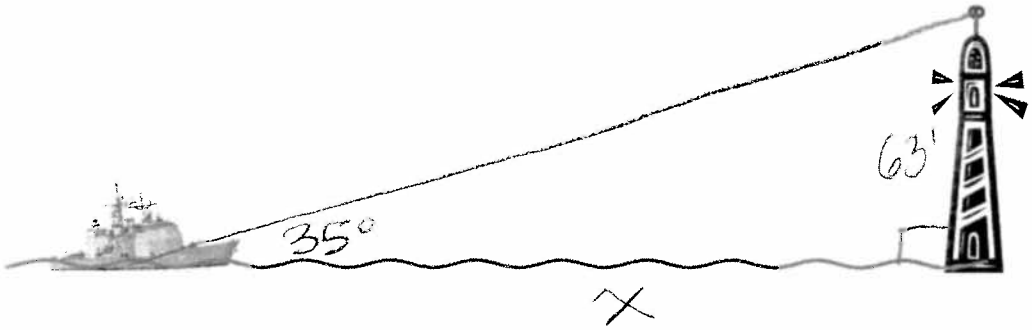
$\tan 47 = \frac{20}{x}$

$x = \frac{20}{\tan 47}$

18.65

19 feet

47. A captain of a ship spots the top of a lighthouse at a 35° angle of elevation. He knows that the lighthouse is 63 feet above the shore line. How far is the ship from lighthouse?



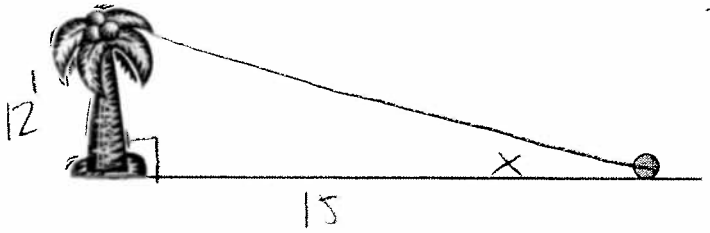
$\tan 35 = \frac{63}{x}$

$x = \frac{63}{\tan 35}$

89.97

90 feet

48. A coconut fell from a 12 foot palm tree and rolled about 15 feet away from it. Find the angle of elevation from the coconut to top of the palm tree.

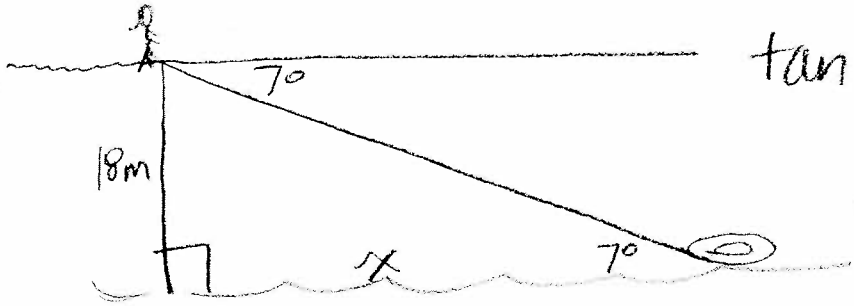


$\tan x = \frac{12}{15}$

38.65

39°

49. A woman standing on a cliff at the edge of the ocean spots a raft. The cliff is 18 meters above sea level and the angle of depression to the ocean is 7°. Find the distance from the raft to the base of the cliff.



$\tan 7 = \frac{18}{x}$

$x = \frac{18}{\tan 7}$

146.59

147 meters