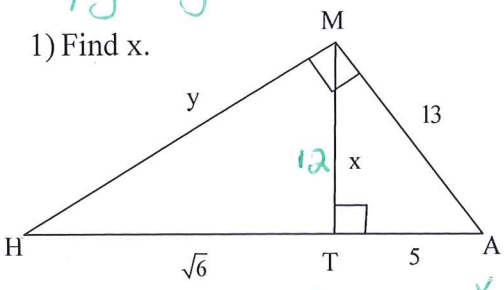
Geometry Review 7/2-7/3 NAME Key Hr#_____

For each problem show work and leave answers in exact form (simplify radicals if necessary) unless instructed to round your answer. **HINT**: If there are no angles marked 30°, 60°, or 45°, then you MUST use the pythagorean theorem to solve!

1) Find x.



$a^2+b^2=c^2$

$x^2+5^2=13^2$

$x^2+25=169$

$x^2=144$

$x=12$

2) Find y.

$a^2+b^2=c^2$

$\sqrt{6}^2+12^2=y^2$

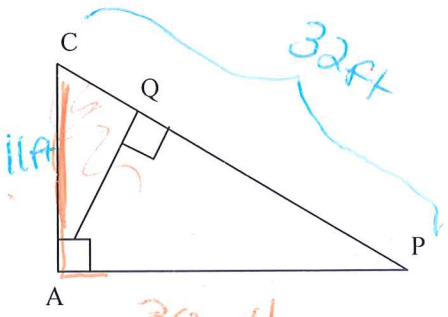
$6+144=y^2$

$150=y^2$

$\sqrt{25\cdot 6}=y$

$5\sqrt{6}=y$

3) In the triangle below, CA = 11 ft, and PC = 32 ft. Find the AREA of ΔCAP to the nearest tenth. Include units.



32 ft

11 ft

30.04

$a^2+b^2=c^2$

$11^2+b^2=32^2$

$121+b^2=1024$

$\sqrt{b^2}=\sqrt{903}$

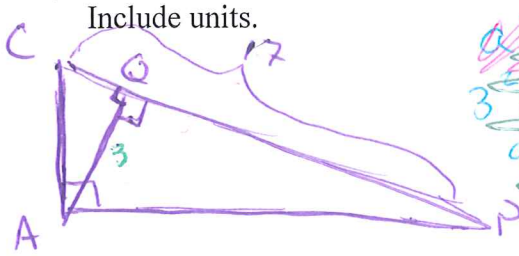
$b=30.04$

$\frac{1}{2}\cdot b\cdot h$

$=\frac{1}{2}\cdot 11\cdot 30.04$

$=165.2\ ft^2$

4) For the triangle in #3 above, if PC = 17 ft and AQ = 3 ft, find AREA of ΔCAP to the nearest tenth. Include units.



$3^2+(17-x)^2=c^2$

$9+289-34x+x^2=c^2$

$x^2-34x+298=c^2$

$\frac{1}{2}\cdot 17\cdot 3$

$\frac{1}{2}\cdot 51$

$25.5\ ft^2$

Solve the following problems: ***Give your answers in exact form AND rounded to the nearest tenth.***

5) The legs of a right triangle have lengths 10 and 24. What is the length of the hypotenuse?

$a^2+b^2=c^2$

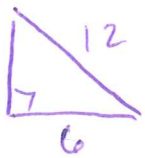
$10^2+24^2=c^2$

$100+576=c^2$

$676=c^2$

$c=26$

6) One leg of a right triangle has length 6 and has a hypotenuse of 12. What is the length of the other leg?



$a^2+b^2=c^2$

$a^2+6^2=12^2$

$a^2+36=144$

$a^2=108$

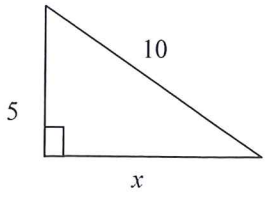
$a=10.4$

or

$6\sqrt{3}$

Find *x*. Give the exact answer.

7)

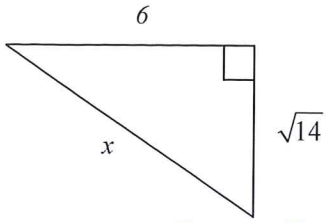


$25 + x^2 = 100$

$x^2 = 75$

$x = 5\sqrt{3}$

8)



$\sqrt{14}^2 + 6^2 = x^2$

$14 + 36 = x^2$

$50 = x^2$

$x = 5\sqrt{2}$

9) Find out if Δ ABC is a right triangle from the given coordinates. *Your work must include the distance formula!*

A(-9, -2) *B*(1, -1) *C*(-3, -7)

$d = \sqrt{(-9-1)^2 + (-2+1)^2}$

$= \sqrt{10^2 + (-1)^2}$

$= \sqrt{100+1}$

$= \sqrt{101}$

$d = \sqrt{(1+3)^2 + (-1+7)^2}$

$= \sqrt{4^2 + 6^2}$

$= \sqrt{16+36}$

$= \sqrt{52}$

$\sqrt{(-9+3)^2 + (-2+7)^2}$

$\sqrt{(-6)^2 + (5)^2}$

$\sqrt{36+25} = \sqrt{61}$

$61 + 52 = 101$

$113 \neq 101$

Not Right

10) Find out if Δ DEF is a right triangle from the given coordinates. *Your work must include the distance formula!*

D(-4, -4) *E*(-6, -9) *F*(-9, -2)

$\sqrt{(-4+6)^2 (-4+9)^2}$

$\sqrt{2^2 + 5^2}$

$\sqrt{29}$

$\sqrt{(-6+9)^2 + (-9+2)^2}$

$\sqrt{(3)^2 + (-7)^2}$

$\sqrt{9+49}$

$\sqrt{58}$

$\sqrt{(-4+9)^2 + (-4+2)^2}$

$\sqrt{5^2 + 2^2}$

$\sqrt{25+4}$

$\sqrt{29}$

$29 + 29 = 58$

Right

Determine whether each set of measures are the sides of a **Right Triangle**. Then state whether they create a **Pythagorean Triple**. Explain why or why not. AND *show work*!

11) 9, 12, 15

$9^2 + 12^2 = 15^2$

$81 + 144 = 225$

$225 = 225$ ✓

Right Δ

Pythagorean Triple

12) 54, 21 , 42

$21^2 + 42^2 = 54^2$

$441 + 1764 = 2916$

$2,205 \neq 2,916$

Not Right Δ

13) $4\sqrt{3}$, 4, 8

$(4\sqrt{3})^2 + 4^2 = 8^2$

$16 \cdot 3 + 16 = 64$

$48 + 16 = 64$

$64 = 64$ ✓

Right Δ

Not Pythagorean Tripple

14) .4, .5, .3

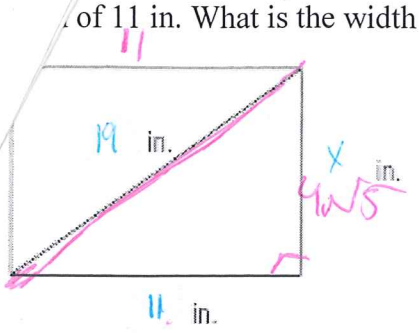
$.3^2 + .4^2 = .5^2$

$.09 + .16 = .25$ ✓ $.25 = .25$

Right Δ

Not Pythag Tripple.

…e size of a computer monitor is the length of its diagonal. You want to buy a 19 in. monitor that has … of 11 in. What is the width of the monitor? What is the perimeter? *Leave your answers in exact form.



$x^2 + 11^2 = 19^2$

$x^2 + 121 = 361$

$\sqrt{x^2} = \sqrt{240}$

$x = \sqrt{16} \cdot \sqrt{15}$

$x = 4\sqrt{15}$

width $= 4\sqrt{15}$

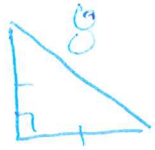
length $= 11$

$2(11) + 2(4\sqrt{15}) =$

$\boxed{22 + 8\sqrt{15}}$

Solve the following problems by using the proper formula for "Special Right Triangles". *Give answers exact answers AND rounded to the nearest tenth.*

16) In a right isosceles triangle, the hypotenuse is 8. Find the length of the legs. Then find the perimeter of the triangle.



$4\sqrt{2}^2 + 4\sqrt{2}^2 = 8^2$

$16(2) + 16(2) = 8^2$

$32 + 32 = 64$

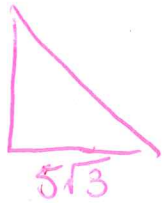
$64 = 64$ ✓

$\frac{8}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{8\sqrt{2}}{2} = 4\sqrt{2}$

$4\sqrt{2} + 4\sqrt{2} + 8$

$\boxed{8\sqrt{2} + 8} \approx$

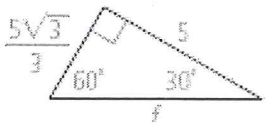
17) What is the length of the hypotenuse of a 45° - 45° - 90° triangle with the leg length $5\sqrt{3}$?



$5\sqrt{3} \cdot \sqrt{2}$

$\boxed{5\sqrt{6}}$

18) What is the value of **f** in the simplest radical form?



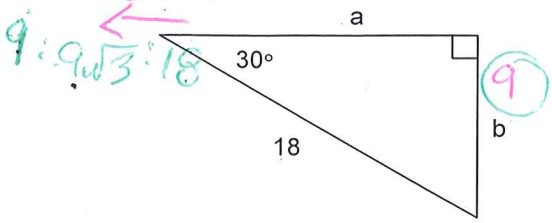
$\frac{5\sqrt{3}}{3} \times 2 = \frac{10\sqrt{3}}{3}$

30 - 60 - 90

19) Find **a** and **b**. Then find the area of the triangle.

1 : √3 : 2

9 : 9√3 : 18



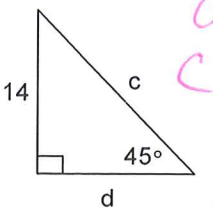
$b = 9$

$a = 9\sqrt{3}$

$\frac{1}{2} \cdot 9 \cdot 9\sqrt{3}$

$\frac{81\sqrt{3}}{2}$

20) Find **c** and **d**.



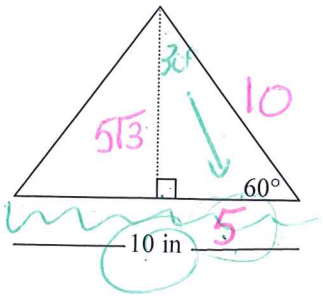
$d = 14$

$c = 14\sqrt{2}$

1 : 1 : √2

14 : 14 : 14√2

21) Find the area and perimeter of this isosceles triangle whose base is 10 inches. Round to the nearest tenth if necessary.



$\frac{1}{2} \cdot 10 \cdot 5\sqrt{3}$

$5 \cdot 5 \cdot \sqrt{3}$

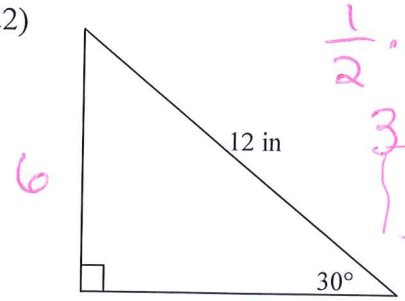
$25\sqrt{3}$

1 : √3 : √2

5 : 5√3 : 10

Find all sides of the triangles in *simplest radical form*. **Then find the area (***rounded to the nearest tenth***).**

22)

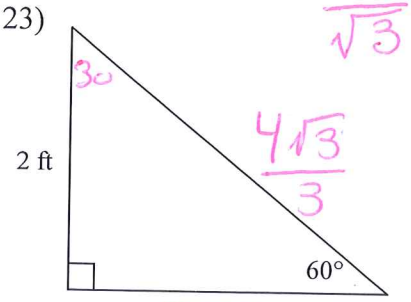


$\frac{1}{2} \cdot 6 \cdot 6\sqrt{3}$

$3 \cdot 6\sqrt{3}$

$18\sqrt{3}\ u^2$

23)



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

$\frac{4\sqrt{3}}{3}$

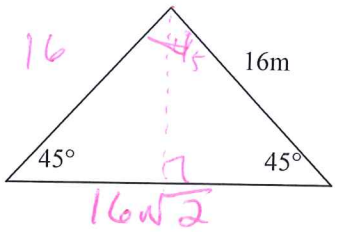
$\frac{1}{2} \cdot 2 \cdot \frac{2\sqrt{3}}{3}$

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

$\frac{2\sqrt{3}}{3}\ u^2$

$\frac{16}{\sqrt{2}} \cdot \frac{16\sqrt{2}}{2} = 8\sqrt{2}$

24)

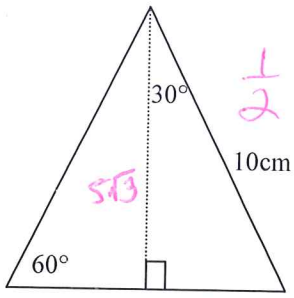


$\frac{1}{2} \cdot 16 \cdot 16$

$8 \cdot 16$

$128\ u^2$

25)



$\frac{1}{2} 10 \cdot 5\sqrt{3}$

$5 \cdot 5 \cdot \sqrt{3}$

$25\sqrt{3}\ u^2$

$\frac{1}{2} \cdot 16 \cdot 16$

$8 \cdot 16$

128

Simplify the following:

26) $\sqrt{200}$

$\sqrt{2} \cdot \sqrt{100}$

$10\sqrt{2}$

27) $\sqrt{72}$

$6\sqrt{2}$

28) $5\sqrt{20}$

$10\sqrt{5}$

29) $\frac{6}{\sqrt{3}}$

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

30) $\frac{4}{\sqrt{2}}$

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

31) $\frac{9}{\sqrt{2}}$

$\frac{9\sqrt{2}}{2}$