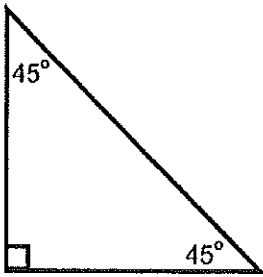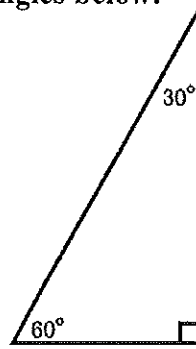**Fill-in the general side lengths for the special right triangles below.**

1.

2.

2. Simplify. **Leave your answer in simplest radical form**.

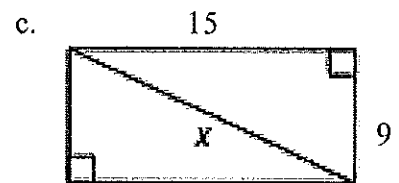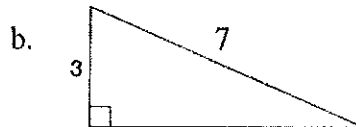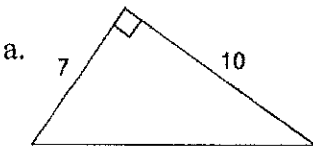   a) $\sqrt{63}$ b) $\sqrt{720}$ c) $3\sqrt{300}$

3. Rationalize the denominator. **Leave your answer in simplest radical form**.

   a) $\dfrac{26}{\sqrt{2}}$ b) $\dfrac{18}{\sqrt{3}}$ c) $\dfrac{10}{\sqrt{6}}$

4. Use Pythagorean theorem to find the missing side lengths. **Write your answer in 2 ways...first as an exact simplified radical, and then as a decimal rounded to the nearest hundredth.**

a.

b.

c.

a.exact _____   b. exact_____   c. exact_____

rounded_____   rounded_____   rounded_____

5. Determine whether the following side lengths create a *right*, *acute*, or *obtuse* triangle. **Show work for full credit.** *(2 pts each)*
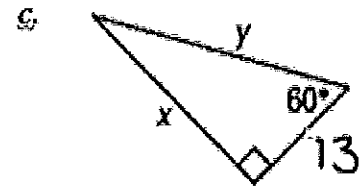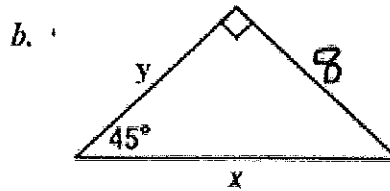
a. *5, 14, 10*

b. *1.5, 6.7, 6.9*

c. *60, 80, 100*

a. _____

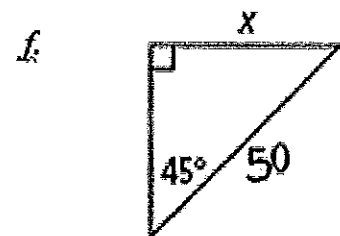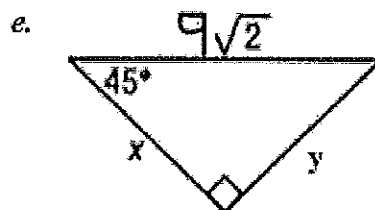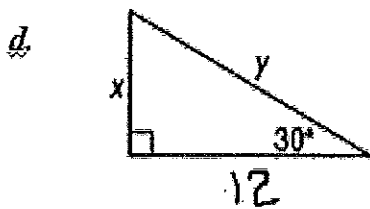b. _____

c. _____

6. Find 's' and the missing side lengths. **Leave your answers in simplified radical form.** *(1 pt each line)*
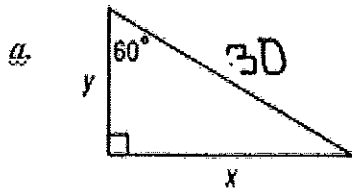
a. $s =$ _____

$x =$ _____

$y =$ _____

b. $s =$ _____

$x =$ _____

$y =$ _____

c. $s =$ _____
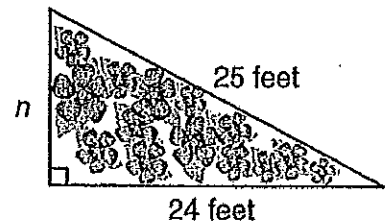
$x =$ _____

$y =$ _____

d. $s =$ _____

$x =$ _____

$y =$ _____

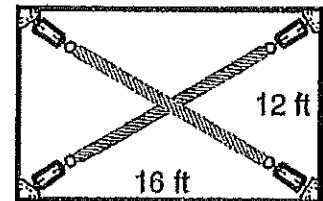*e.* $s =$ _____

$x =$ _____

$y =$ _____

f. $s =$ _____

$x =$ _____

Hint: for the following word problems, draw a picture!

7. Stephanie is planning a right triangular garden. She marked two sides that measure 24 feet and 25 feet. What is the length of side n? _____

25 feet

n

24 feet

8. A builder needs to add diagonal braces to a wall. The wall is 16 feet wide by 12 feet high. What is the length of each brace?

_____

12 ft

16 ft

9. The diagram at the right shows how a post was broken. What was the original height of the post? _____

2 feet
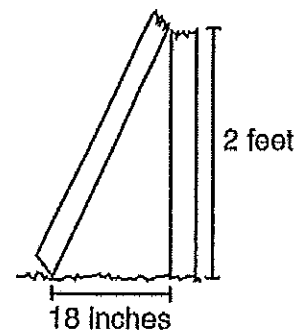
18 inches

10. The **perimeter** of a square is 100 inches. Find the length of a diagonal. **Leave your answer in simplest radical form.**

Length of diagonal: _____

If you need more practice with these concepts, please do **#4 – 12 on page 535** (Chapter review) Then check your answers below;

4) $2\sqrt{113}$ 5) 17   6) $12\sqrt{2}$ 7) $9\sqrt{3}$ 8) x=7, y=$7\sqrt{2}$ 9) $5\sqrt{2}$ 10) x=$6\sqrt{3}$, y = 12

1) x = 7, y = $7\sqrt{3}$ 12) 70.7 feet

ANSWERS to this worksheet are on back. PLEASE CHECK YOUR ANSWERS!!!

Geometry 22: REVIEW for Quiz 8.1-8.2   Name __ANSWERS__   Per ____

Fill-in the general side lengths for the special right triangles below.

1.
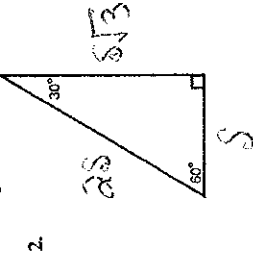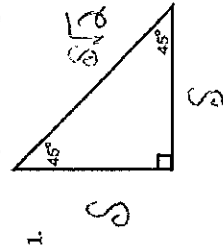45° ... 45° ... $s\sqrt{2}$ ... s ... s

2.
30° ... 60° ... $2s$ ... s ... $s\sqrt{3}$

2. Simplify. __Leave your answer in simplest radical form.__

a) $\sqrt{63}$
$\sqrt{9}\sqrt{7}$
$\boxed{3\sqrt{7}}$

b) $\sqrt{720}$
$\sqrt{36}\sqrt{20}$
$6\cdot 2\sqrt{5}$
$\boxed{12\sqrt{5}}$

c) $3\sqrt{300}$
$3\sqrt{100}\sqrt{3}$
$3\cdot10\sqrt{3}$
$\boxed{30\sqrt{3}}$

3. Rationalize the denominator. __Leave your answer in simplest radical form.__

a) $\dfrac{26}{\sqrt{2}}$
$\dfrac{26\sqrt{2}}{2}=\boxed{13\sqrt{2}}$

b) $\dfrac{18}{\sqrt{3}}$
$\dfrac{18}{\sqrt{3}}\cdot\dfrac{\sqrt{3}}{\sqrt{3}}=\dfrac{18\sqrt{3}}{3}=\boxed{6\sqrt{3}}$

c) $\dfrac{10}{\sqrt{6}}$
$\dfrac{10}{\sqrt{6}}\cdot\dfrac{\sqrt{6}}{\sqrt{6}}=\dfrac{10\sqrt{6}}{6}=\boxed{\dfrac{5\sqrt{6}}{3}}$

4. Use Pythagorean theorem to find the missing side lengths. __Write your answer in 2 ways... first as an exact simplified radical, and then as a decimal rounded to the nearest hundredth.__

a. (triangle 7, 10, x)
$7^2+10^2=x^2$
$49+100=x^2$
$\sqrt{149}=x$
a. exact $\boxed{\sqrt{149}}$
rounded $\boxed{12.21}$

b. (triangle 3, 7, x)
$3^2+x^2=7^2$
$9+x^2=49$
$x^2=40$
$x=\sqrt{40}=2\sqrt{10}$
b. exact $\boxed{2\sqrt{10}}$
rounded $\boxed{6.32}$

c. (triangle 15, 9, x)
$15^2+9^2=x^2$
$225+81=x^2$
$306=x^2$
$x=\sqrt{306}=3\sqrt{34}$
c. exact $\boxed{3\sqrt{34}}$
rounded $\boxed{17.49}$

WORD PROBLEMS

7) $24^2+n^2=25^2$
$576+n^2=625$
$n^2=49$
$\boxed{n=7\,\text{ft}}$

8) $12^2+16^2=x^2$
$\boxed{x=20\,\text{ft}}$

---

5. Determine whether the following side lengths create a __right, acute,__ or __obtuse__ triangle. Show work for __full credit.__ (2 pts each)

a. 5, 14, 10
$5^2+10^2 \;?\; 14^2$
$25+100 \;?\; 196$
125
a. $\boxed{\text{obtuse}}$ ($c^2>a^2+b^2$)

b. 1.5, 6.7, 6.9
$1.5^2+6.7^2 \;?\; 6.9^2$
$2.25+44.89$
$47.14 < 47.61$
b. $\boxed{\text{obtuse}}$

c. 60, 80, 100
c. $\boxed{\text{right}}$

6. Find 's' and the missing side lengths. __Leave your answers in simplified radical form.__ (1 pt each line)

a. (30-60-90, short side 30, y opposite 60, x)
$2s=30$
$s=15$
$s=15$ ... $x=15\sqrt{3}$ ... $y=15$

b. (45-45-90, hyp $5\sqrt{2}$, legs x, y)
$s\sqrt{2}=5\sqrt{2}$
$s=5$
$s=5$ ... $x=5\sqrt{3}$ ... $y=5$

c. (30-60-90, hyp 13, $5\sqrt{3}$)
$s=13$
$x=13\sqrt{3}$
$y=26$

b. (45-45-90, $9\sqrt{2}$, x, y)
$s=9$
$x=9$
$y=9$

e. (30-60-90, 12, $5\sqrt{3}$)
$\dfrac{5\sqrt{3}}{\sqrt{3}}=\dfrac{5\sqrt{3}}{3}$
$s=\boxed{4\sqrt{3}}$
$x=\boxed{4\sqrt{3}}$
$y=\boxed{8\sqrt{3}}$

f. (45-45-90, 50, $5\sqrt{2}$, x)
$s\sqrt{2}=50$
$s=\dfrac{50}{\sqrt{2}}=\dfrac{50\sqrt{2}}{2}=25\sqrt{2}$
$s=\boxed{25\sqrt{2}}$
$x=\boxed{25\sqrt{2}}$

10) (square, side 25, diagonal $25\sqrt{2}$)
$\boxed{\text{diag}=25\sqrt{2}\,\text{in}}$

9) $18^2+24^2=x^2$
$x=30+24$
$\boxed{54\text{ inches}}$