

Unit 7: Right Triangles

1

I can use Pythagorean Theorem to find the missing side of a right triangle.

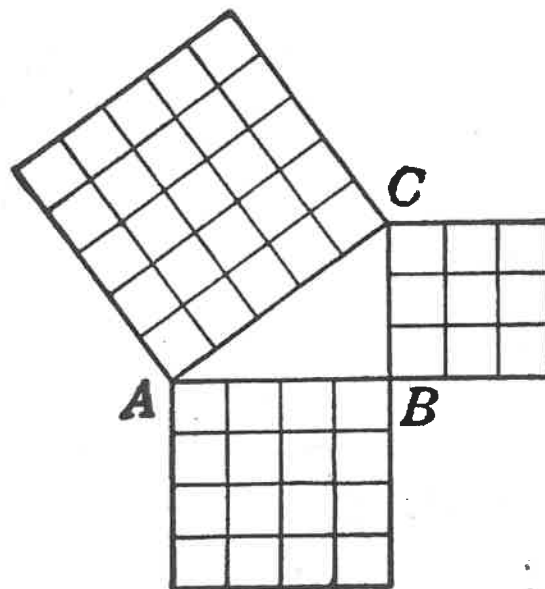
*Initial
Score**Updated
Score*

2

I can use the 45-45-90 and 30-60-90 ratios to find missing sides of a right triangle.

3

I can use trig ratios to find missing sides and angles in a right triangle.

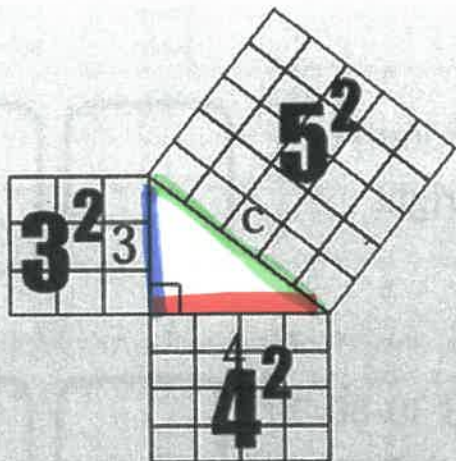


①

Pythagorean Theorem:

Pythagorean Theorem

If you **square the legs** of a right triangle and then **add**, the result will be the same as the **square of the Hypotenuse**.



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

$$3^2 + 4^2 = c^2$$

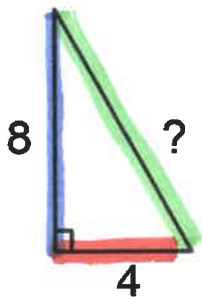
$$9 + 16 = c^2$$

$$25 = c^2$$

$$\sqrt{25} = \sqrt{c^2}$$

$$5 = c$$

Examples:



$$8^2 + 4^2 = c^2$$

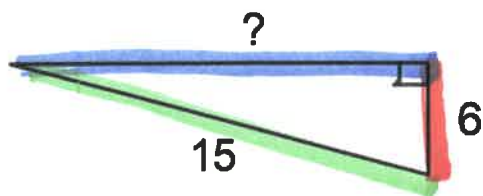
$$64 + 16 = c^2$$

$$80 = c^2$$

$$\sqrt{80} = c$$

$$2 \times 2 \times 2 \times 2 \times 5$$

$$c = 4\sqrt{5}$$



$$a^2 + 6^2 = 15^2$$

$$a^2 + 36 = 225$$

$$a^2 = 189$$

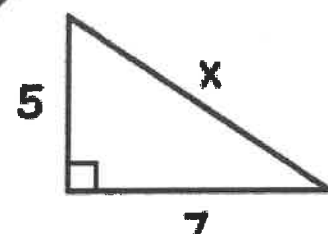
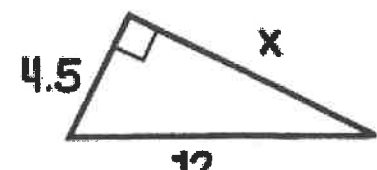
$$a = \sqrt{189}$$

$$3 \times 3 \times 7$$

$$a = 3\sqrt{21}$$

Pythagorean Theorem Practice:

For each problem, use the Pythagorean Theorem to find the missing length. Show your answer as a simplified radical and as a decimal rounded to the nearest tenth.

| | |
|--|--|
| <p>1</p>  <p>5 7 x</p> $5^2 + 7^2 = x^2$ $25 + 49 = x^2$ $\sqrt{74} = \sqrt{x^2}$ $x = 8.6$ <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $\sqrt{74}$ or 8.6 </div> | <p>2</p>  <p>4.5 12 x</p> $x^2 + 4.5^2 = 12^2$ $x^2 + 20.25 = 144$ $\sqrt{x^2} = \sqrt{123.75}$ $x = 11.1$ <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $\sqrt{123.75}$ 11.1 </div> |
|--|--|

3. Two sides of a right triangle are 8 and 12 in.
 a. Find the missing side if these are the lengths of the legs.

$$8^2 + 12^2 = c^2$$

$$64 + 144 = c^2$$

$$\sqrt{208} = \sqrt{c^2}$$

$$\sqrt{208}$$

$$2 \sqrt{104}$$

$$2 \sqrt{52}$$

$$2 \sqrt{26}$$

$$2 \sqrt{13}$$

$4\sqrt{13}$ or
14.4 in

- b. Find the missing side if these are the lengths of a leg and hypotenuse.

$$a^2 + 8^2 = 12^2$$

$$a^2 + 64 = 144$$

$$\sqrt{a^2} = \sqrt{80}$$

$$\sqrt{80}$$

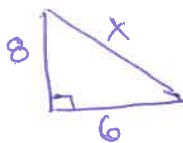
$$8 \sqrt{10}$$

$$2 \sqrt{20}$$

$$2 \sqrt{5}$$

$4\sqrt{5}$ or
8.9 in

4. The foot of a ladder is placed 6 feet from a wall. If the top of the ladder rests 8 feet up on the wall, how long is the ladder?



$$6^2 + 8^2 = c^2$$

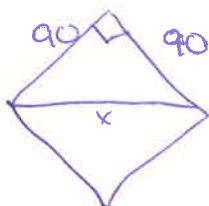
$$36 + 64 = c^2$$

$$100 = c^2$$

$$10 = c$$

10 ft

5. A baseball diamond is a square with sides of 90 feet. What is the shortest distance, to the nearest tenth of a foot, between first base and third base?



$$90^2 + 90^2 = c^2$$

$$8100 + 8100 = c^2$$

$$\sqrt{16200} = \sqrt{c^2}$$

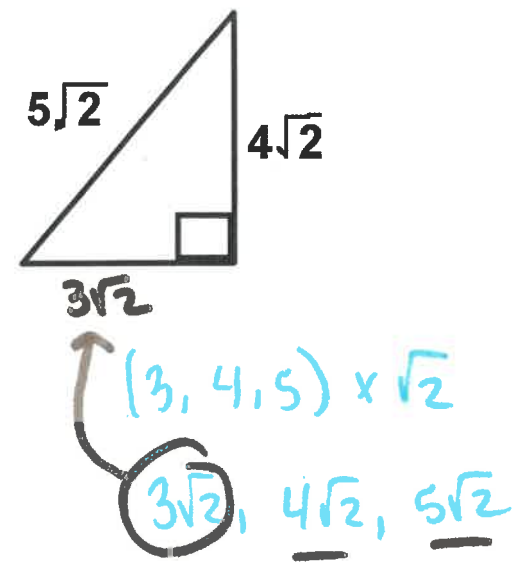
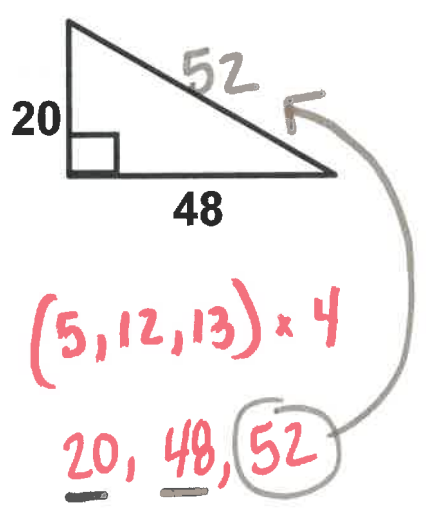
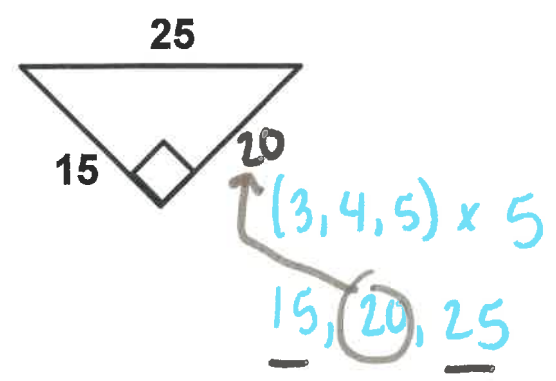
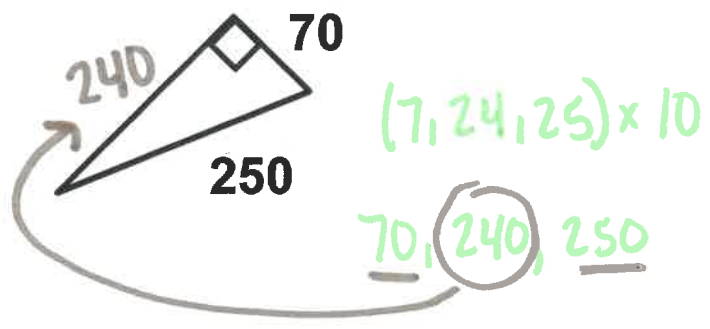
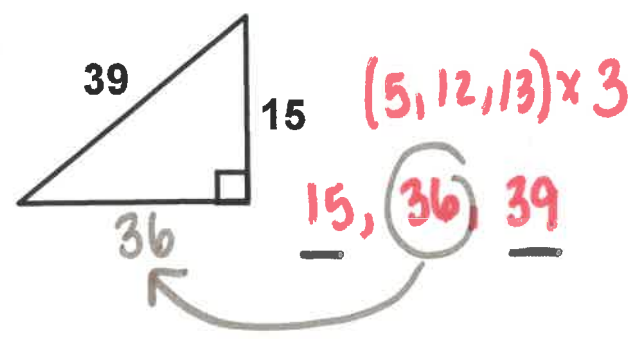
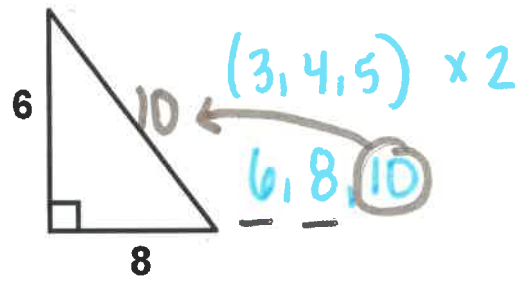
$90\sqrt{2}$ or
127.3 ft



3

Right Triangle Triples:

| | |
|------------------|------------------|
| <u>3, 4, 5</u> | <u>7, 24, 25</u> |
| <u>5, 12, 13</u> | <u>8, 15, 17</u> |

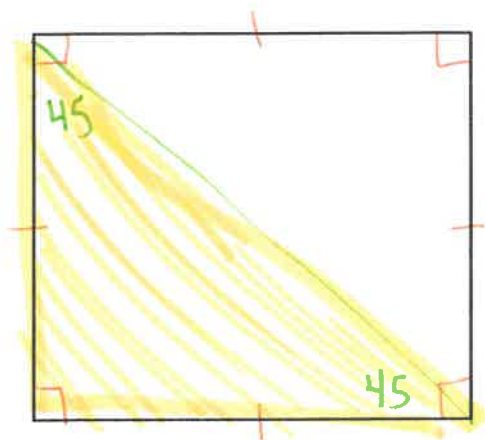


6

45-45-90 Triangles:

SPECIAL RIGHT TRIANGLES

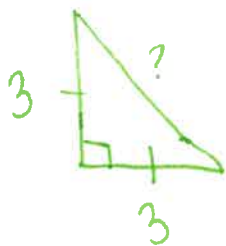
45°-45°-90°



Square Facts:

- 4 equal sides
- 4 equal angles (90°)
- Diagonal Creates 2 isosceles Δ's (45-45-90)

Find the Length of the Diagonal of the Square



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

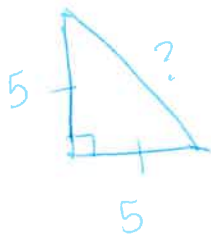
$$3^2 + 3^2 = c^2$$

$$9 + 9 = c^2$$

$$\sqrt{18} = \sqrt{c^2}$$

$$c = 3\sqrt{2}$$

Find the Length of the Diagonal of the Square



$$5^2 + 5^2 = c^2$$

$$25 + 25 = c^2$$

$$\sqrt{50} = \sqrt{c^2}$$

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

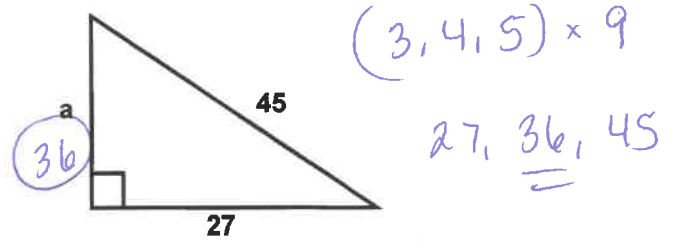
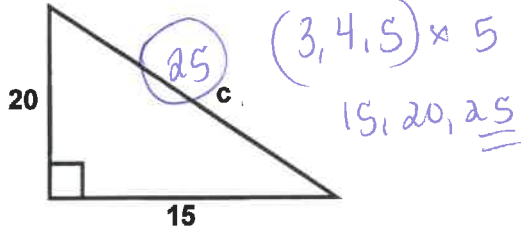
Rule

$hyp = leg \cdot \sqrt{2}$

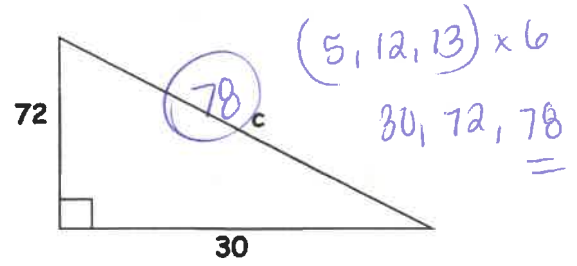
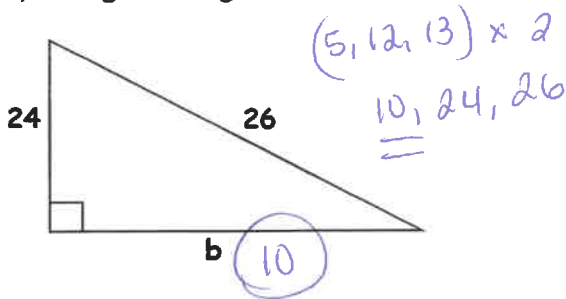
Right Triangle Triples Practice:

Find the missing side in each triangle. (Triangles not to scale)

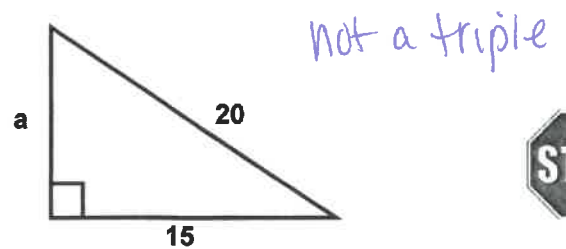
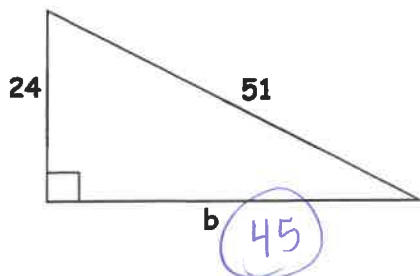
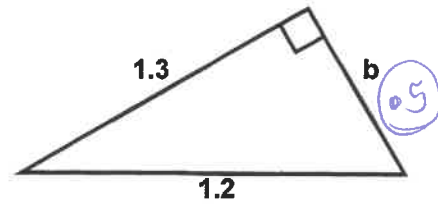
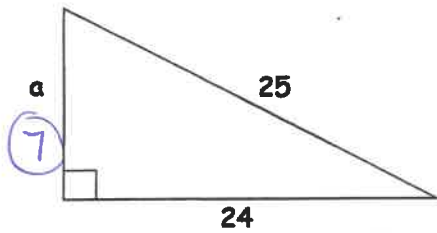
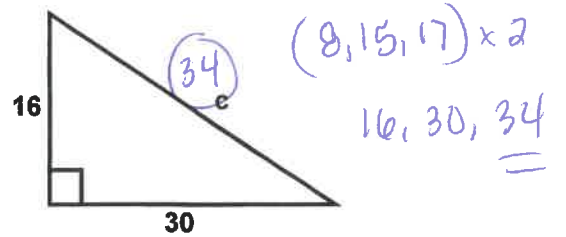
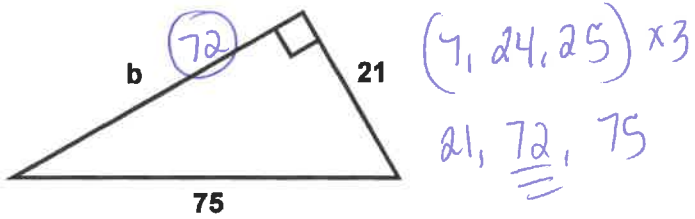
1. 3, 4, 5 Right Triangles



2. 5, 12, 13 Right Triangles

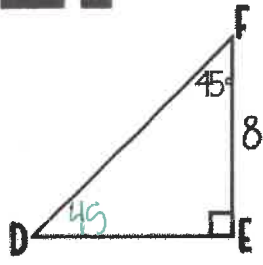


3. Mixed Practice



9

EX 1

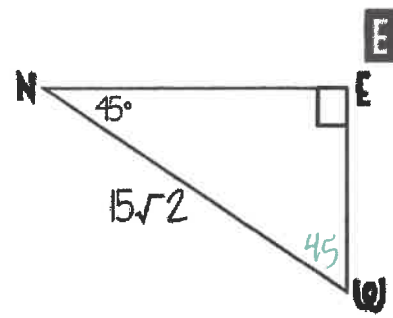


| | | |
|----|----|-------------|
| 45 | 45 | 90 |
| x | x | $x\sqrt{2}$ |
| 8 | 8 | $8\sqrt{2}$ |

ED = 8

DF = $8\sqrt{2}$

EX 2

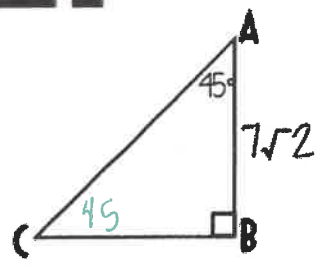


| | | |
|----|----|--------------|
| 45 | 45 | 90 |
| x | x | $x\sqrt{2}$ |
| 15 | 15 | $15\sqrt{2}$ |

NE = 15

EW = 15

EX 3

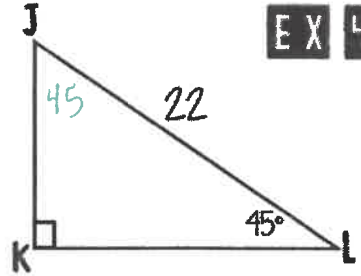


| | | |
|-------------|-------------|---------------------|
| 45 | 45 | 90 |
| x | x | $x\sqrt{2}$ |
| $7\sqrt{2}$ | $7\sqrt{2}$ | $7\sqrt{2}\sqrt{2}$ |
| | | $7\sqrt{4}$ |
| | | 14 |

BC = $7\sqrt{2}$

AC = 14

EX 4



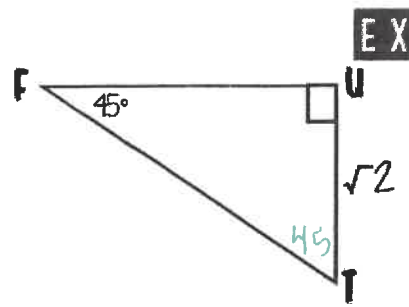
| | | |
|--------------|--------------|-------------|
| 45 | 45 | 90 |
| x | x | $x\sqrt{2}$ |
| $11\sqrt{2}$ | $11\sqrt{2}$ | 22 |

JK = $11\sqrt{2}$

KL = $11\sqrt{2}$

Now you try...

EX 5

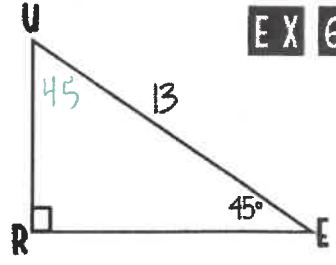


| | | |
|------------|------------|--------------------|
| 45 | 45 | 90 |
| x | x | $x\sqrt{2}$ |
| $\sqrt{2}$ | $\sqrt{2}$ | $\sqrt{2}\sqrt{2}$ |
| | | $\sqrt{4}$ |
| | | 2 |

FU = $\sqrt{2}$

FT = 2

EX 6



| | | |
|------------------------|------------------------|-------------|
| 45 | 45 | 90 |
| x | x | $x\sqrt{2}$ |
| $\frac{13\sqrt{2}}{2}$ | $\frac{13\sqrt{2}}{2}$ | 13 |

UR = $\frac{13\sqrt{2}}{2}$

RE = $\frac{13\sqrt{2}}{2}$

SPECIAL RIGHT TRIANGLES: 45-45-90

| x (leg) | x (leg) | $x\sqrt{2}$ (hyp) |
|--------------|--------------|-----------------------------------|
| 8 | 8 | $8\sqrt{2}$ |
| 7 | 7 | $7\sqrt{2}$ |
| 6.5 | 6.5 | $6.5\sqrt{2}$ |
| $4\sqrt{11}$ | $4\sqrt{11}$ | $4\sqrt{11}\sqrt{2} = 4\sqrt{22}$ |
| $\sqrt{3}$ | $\sqrt{3}$ | $\sqrt{3}\sqrt{2} = \sqrt{6}$ |
| $5\sqrt{7}$ | $5\sqrt{7}$ | $5\sqrt{7}\sqrt{2} = 5\sqrt{14}$ |
| $2\sqrt{5}$ | $2\sqrt{5}$ | $2\sqrt{5}\sqrt{2} = 2\sqrt{10}$ |
| 6 | 6 | $6\sqrt{2}$ |
| $7\sqrt{2}$ | $7\sqrt{2}$ | 14 |
| $15\sqrt{2}$ | $15\sqrt{2}$ | 30 |
| $21\sqrt{3}$ | $21\sqrt{3}$ | $21\sqrt{6}$ |

$x\sqrt{2} = 6\sqrt{2}$
 $x = 6$

$x\sqrt{2} = 14$
 $x = \frac{14\sqrt{2}}{\sqrt{2}}$

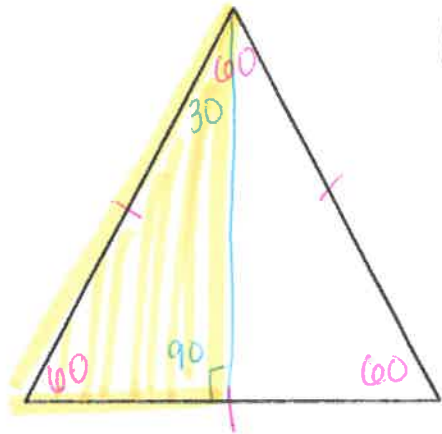
$x = \frac{14\sqrt{2}}{2}$

$x\sqrt{2} = 30$

$\frac{x\sqrt{2}}{\sqrt{2}} = \frac{21\sqrt{6}}{\sqrt{2}}$

SPECIAL RIGHT TRIANGLES

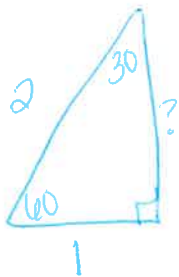
30°-60°-90°



Equilateral Triangle Facts:

- 3 equal sides
- 3 equal angles (60°)
- altitude creates 2 scalene Δ 's (30-60-90)

Find the Length of the Altitude of the Triangle



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

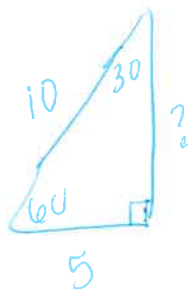
$$a^2 + 1^2 = 2^2$$

$$a^2 + 1 = 4$$

$$\sqrt{a^2} = \sqrt{3}$$

$$a = \sqrt{3}$$

Find the Length of the Altitude of the Triangle



$$5^2 + b^2 = 10^2$$

$$25 + b^2 = 100$$

$$\sqrt{b^2} = \sqrt{75}$$

$$b = 5\sqrt{3}$$

Rule

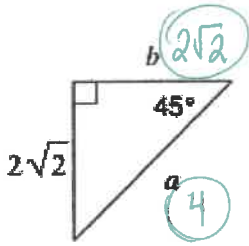
$$\text{hyp} = 2 (\text{short leg})$$

$$\text{Medium leg} = (\text{short leg}) \cdot \sqrt{3}$$

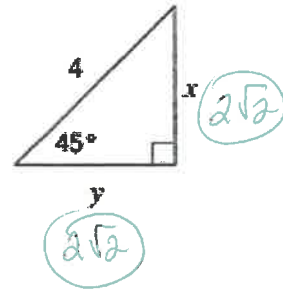
45-45-90 Practice:

Find the missing side lengths. Leave your answers as radicals in simplest form.

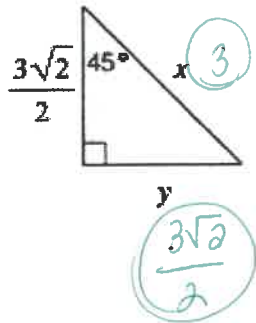
1)



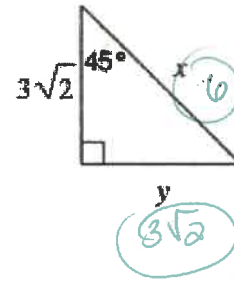
2)



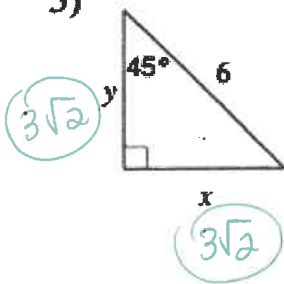
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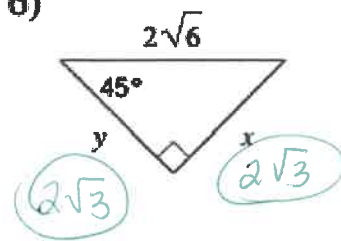
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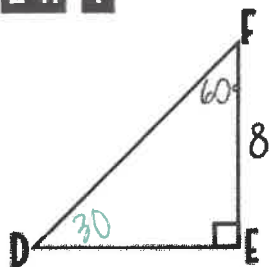
5)



6)



EX 1

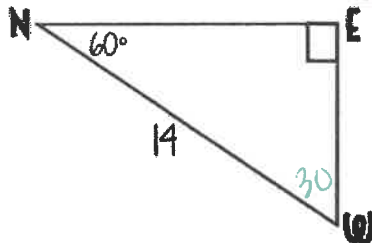


| | | |
|----|-----|----|
| 30 | 60 | 90 |
| x | x√3 | 2x |
| 8 | 8√3 | 16 |

ED = 8√3

DF = 16

EX 2

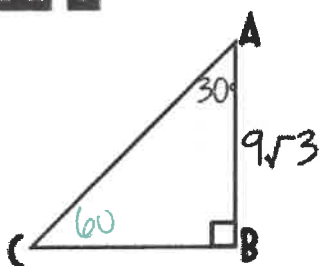


| | | |
|----|-----|----|
| 30 | 60 | 90 |
| x | x√3 | 2x |
| 7 | 7√3 | 14 |

NE = 7

EW = 7√3

EX 3

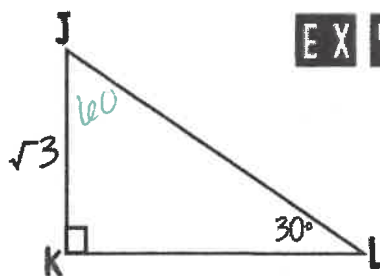


| | | |
|----|-----|----|
| 30 | 60 | 90 |
| x | x√3 | 2x |
| 9 | 9√3 | 18 |

BC = 9

AC = 18

EX 4



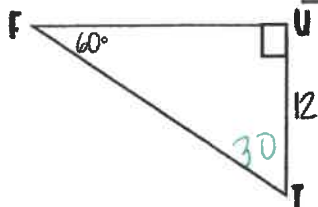
| | | |
|----|-----|-----|
| 30 | 60 | 90 |
| x | x√3 | 2x |
| √3 | 3 | 2√3 |

JL = 2√3

KL = 3

Now you try...

EX 5

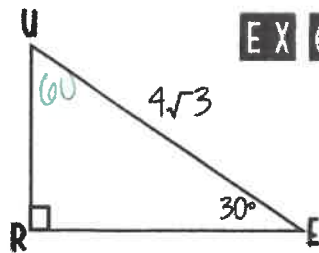


| | | |
|-----|-----|-----|
| 30 | 60 | 90 |
| x | x√3 | 2x |
| 4√3 | 12 | 8√3 |

FU = 4√3

FT = 8√3

EX 6



| | | |
|-----|-----|-----|
| 30 | 60 | 90 |
| x | x√3 | 2x |
| 2√3 | 6 | 4√3 |

UR = 2√3

RE = 6

SPECIAL RIGHT TRIANGLES: 30-60-90

| SPECIAL RIGHT TRIANGLES: 30-60-90 | | |
|--------------------------------------|-------------|---------------|
| x | x√3 | 2x |
| 6 | 6√3 | 2(6) = 12 |
| 8 | 8√3 | 2(8) = 16 |
| 12.5 | 12.5√3 | 2(12.5) = 25 |
| 2√2 | 2√2√3 = 2√6 | 2(2√2) = 4√2 |
| 10 | 10√3 | 2(10) = 20 |
| 3√2 | 3√6 | 2(3√2) = 6√2 |
| 3√3 | 9 | 2(3√3) = 6√3 |
| 5√3 | 15 | 2(5√3) = 10√3 |
| 10 | 10√3 | 20 |
| 7√3 | 7√3√3 = 21 | 14√3 |
| 9 | 9√3 | 18 |

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

$$\frac{x\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{6}}{\sqrt{3}}$$

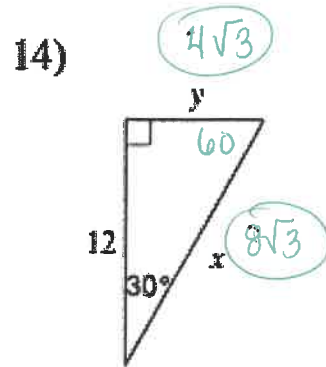
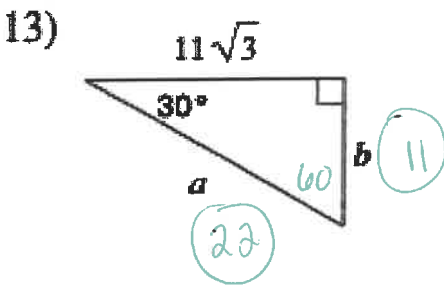
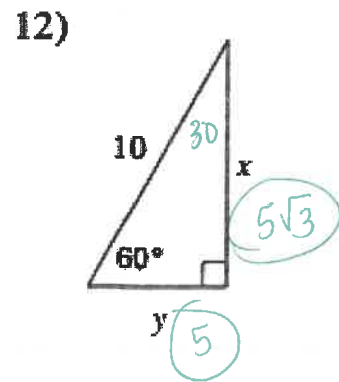
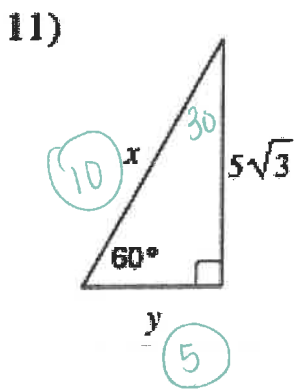
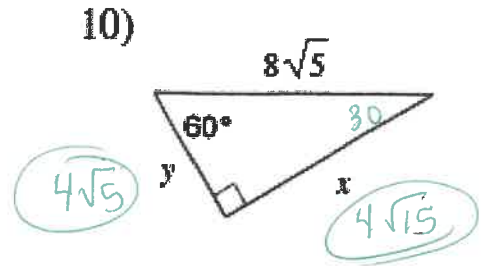
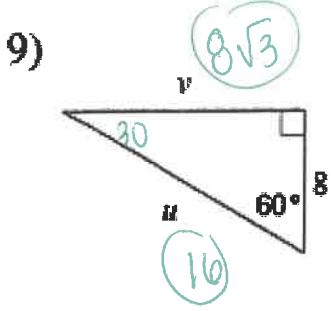
$$\frac{x\sqrt{3}}{\sqrt{3}} = \frac{9\sqrt{3}}{\sqrt{3}} = \frac{9\sqrt{3}}{3}$$

$$2x = 20 \\ x = 10$$

$$2x = 14\sqrt{3} \\ x = 7\sqrt{3}$$

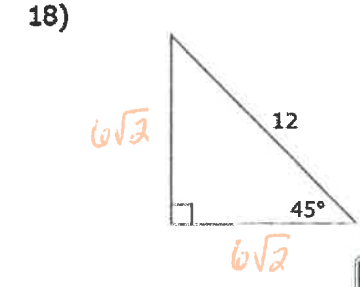
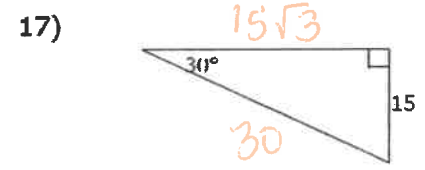
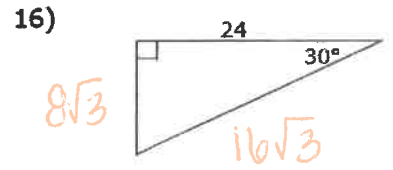
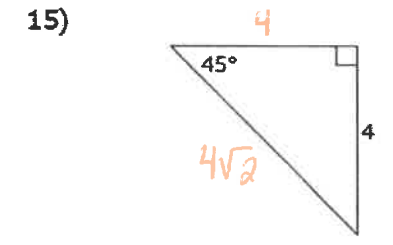
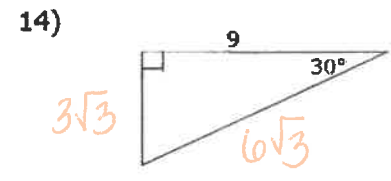
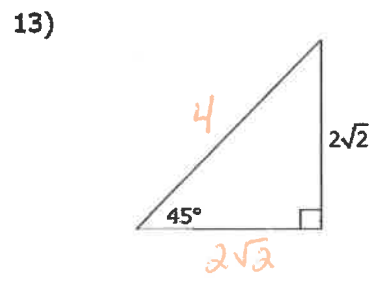
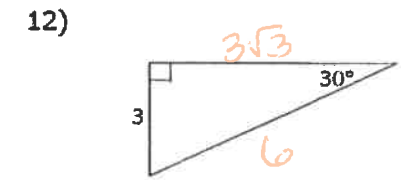
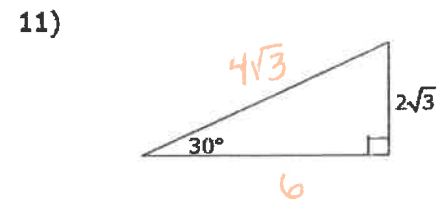
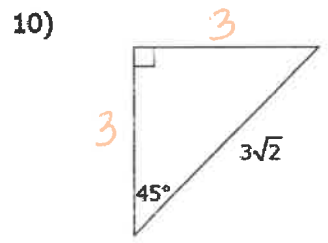
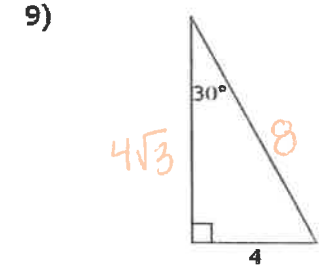
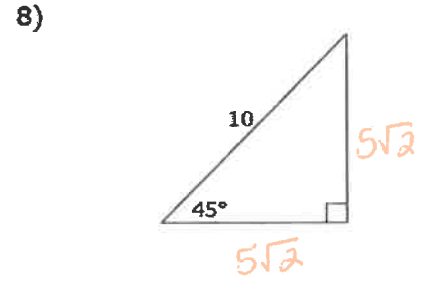
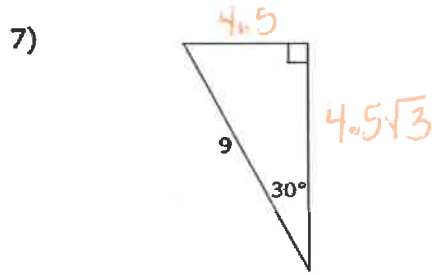
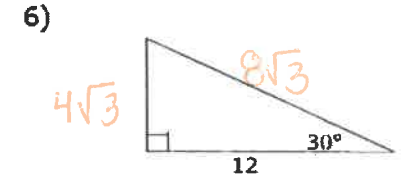
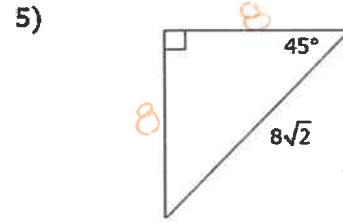
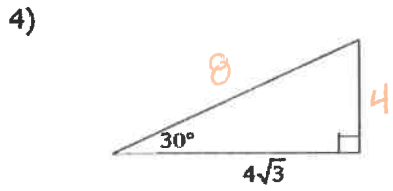
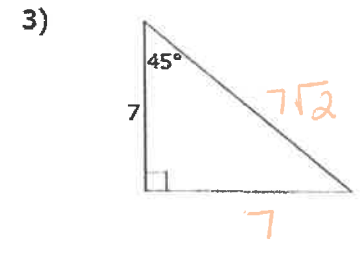
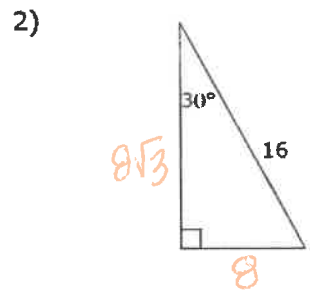
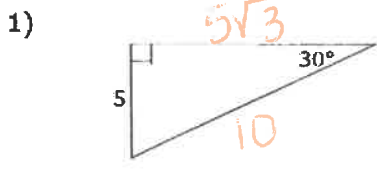
$$2x = 18 \\ \frac{2x}{2} = \frac{18}{2} \\ x = 9$$

30-60-90 Practice:



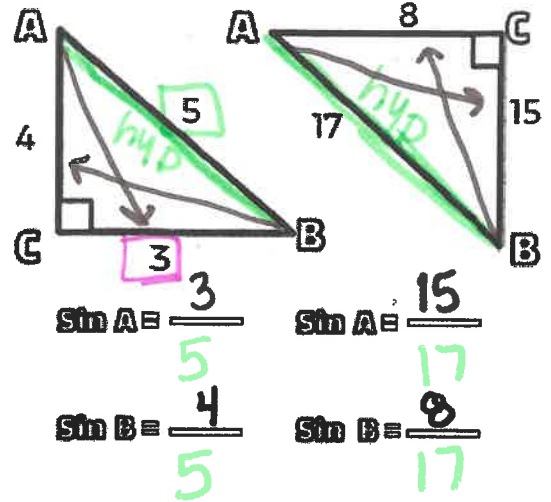
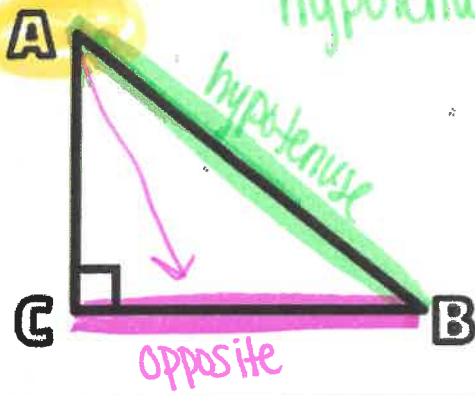
13) **45-45-90 & 30-60-90 Practice:**

Find the missing lengths for each triangle below.

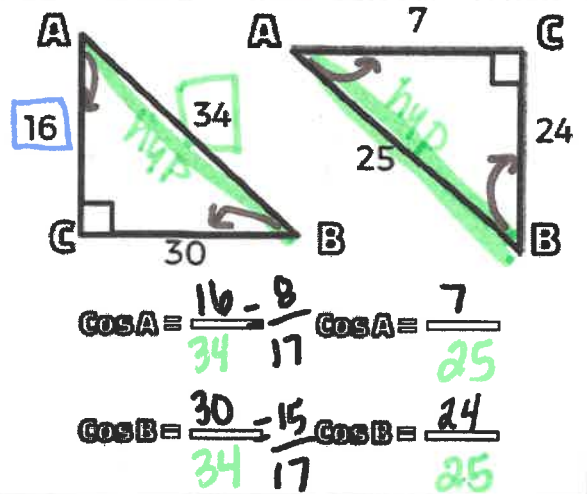
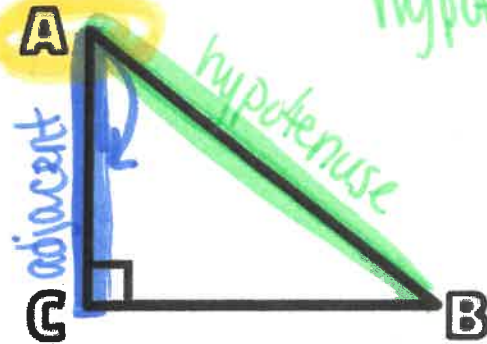


Trigonometric Ratios

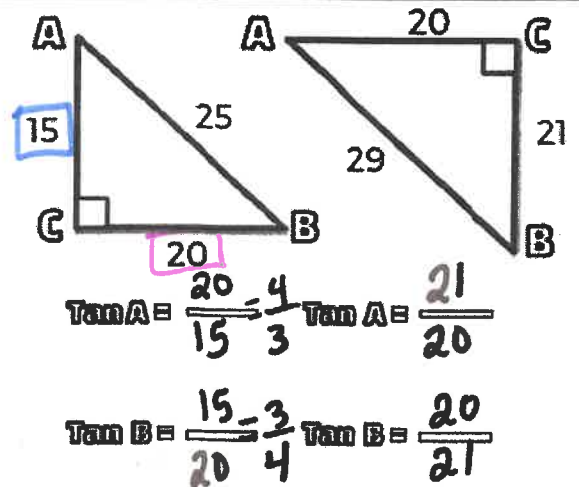
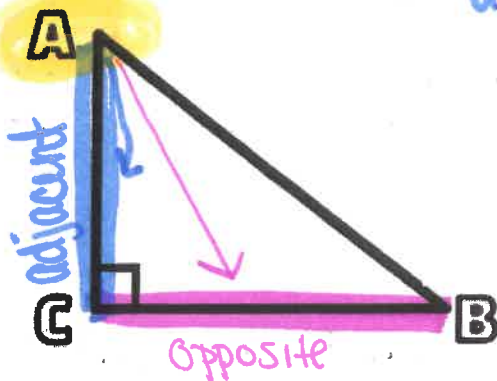
Sine = $\frac{\text{opposite}}{\text{hypotenuse}}$



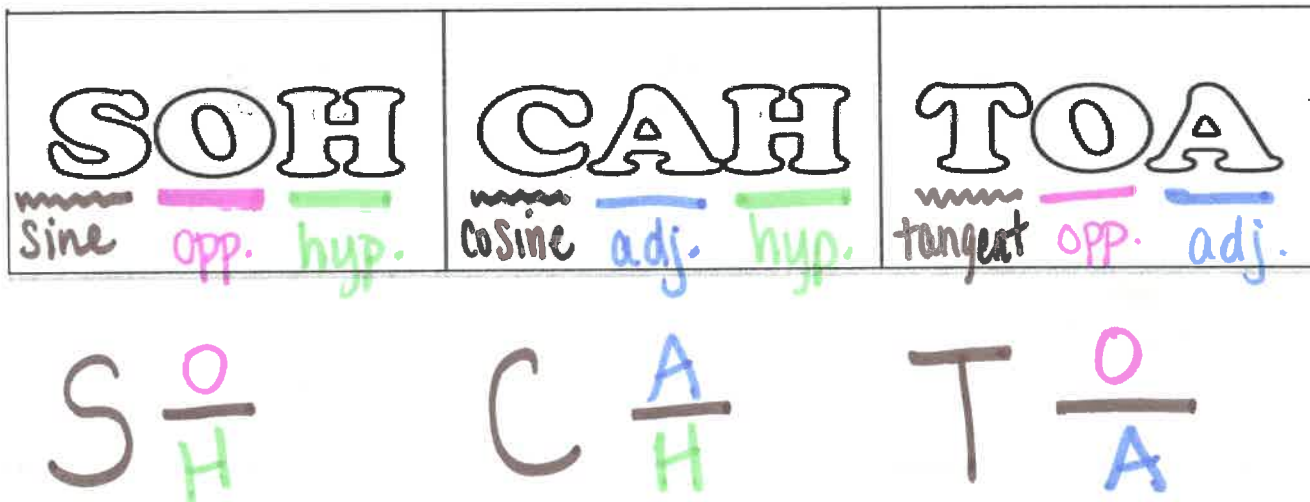
Cosine = $\frac{\text{adjacent}}{\text{hypotenuse}}$



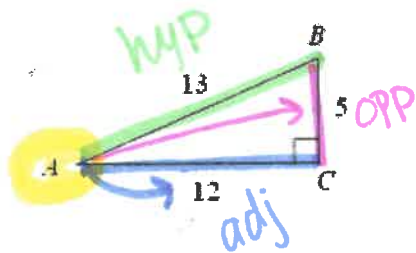
Tangent = $\frac{\text{opposite}}{\text{adjacent}}$



Trig Ratio Practice:



1. Find the sine, cosine, and tangent of $\angle A$ and $\angle B$.



$$\sin A = \frac{5}{13}$$

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

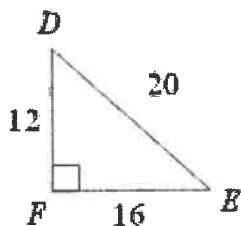
$$\tan A = \frac{5}{12}$$

$$\sin B = \frac{12}{13}$$

$$\cos B = \frac{5}{13}$$

$$\tan B = \frac{12}{5}$$

2. Find the sine, cosine, and tangent of $\angle D$ and $\angle E$.



$$\sin D = \frac{16}{20} = \frac{4}{5}$$

$$\cos D = \frac{12}{20} = \frac{3}{5}$$

$$\tan D = \frac{16}{12} = \frac{4}{3}$$

$$\sin E = \frac{12}{20} = \frac{3}{5}$$

$$\cos E = \frac{16}{20} = \frac{4}{5}$$

$$\tan E = \frac{12}{16} = \frac{3}{4}$$

3. Use your calculator to find sine, cosine, and tangent for the given measure of the angle.

| | | | |
|-------------------|--------------------|-------------------|------------------|
| a) 15° | b) 81° | c) 66° | d) 8° |
| $\sin 15 = .2588$ | $\sin 81 = .9877$ | $\sin 66 = .9135$ | $\sin 8 = .1392$ |
| $\cos 15 = .9659$ | $\cos 81 = .1564$ | $\cos 66 = .4067$ | $\cos 8 = .9903$ |
| $\tan 15 = .2679$ | $\tan 81 = 6.3138$ | $\tan 66 = 2.246$ | $\tan 8 = .1405$ |



Solving Using Trig Ratios

Determining which ratio to use:

1. Circle the angle
2. Label the sides that are marked in reference to that angle
 - 3 possible pairings:
 - opp and hyp
 - adj and hyp
 - opp and adj

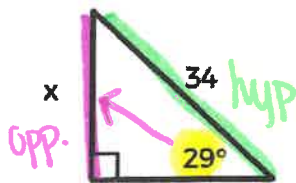
3. Choose the correct function based on the pairing

$$\sin = \frac{\text{opp}}{\text{hyp}} \quad \cos = \frac{\text{adj}}{\text{hyp}} \quad \tan = \frac{\text{opp}}{\text{adj}}$$

4. Set-up and solve your equation for the missing side or angle

$$\text{trig ratio (angle)} = \frac{\text{side}}{\text{side}}$$

Using Sin:

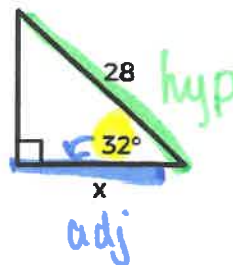


$$\frac{\sin 29}{1} = \frac{x}{34}$$

$$x = (\sin 29)(34)$$

$$x = 16.5$$

Using Cos:

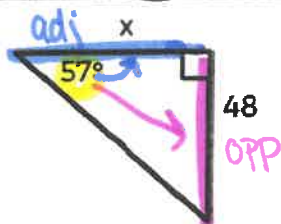


$$\frac{\cos 32}{1} = \frac{x}{28}$$

$$x = (\cos 32)(28)$$

$$x = 23.7$$

Using Tan:

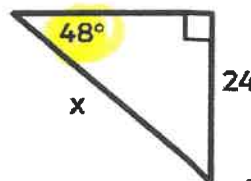


$$\frac{\tan 57}{1} = \frac{48}{x}$$

$$\frac{(\tan 57)(x)}{\tan 57} = \frac{48}{\tan 57}$$

$$x = 31.2$$

Now you try....



$$\frac{\sin 48}{1} = \frac{24}{x}$$

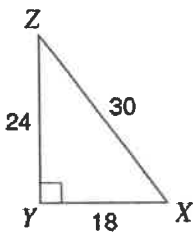
$$\frac{(\sin 48)(x)}{\sin 48} = \frac{24}{\sin 48}$$

$$x = 32.3$$

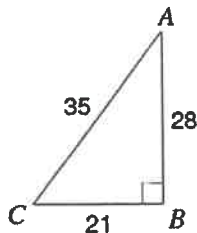
1) Solving with Trig Practice:

Set up each indicated ratio.

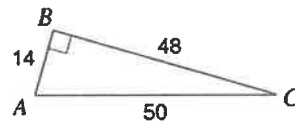
1. $\sin Z = \frac{18}{30} = \frac{3}{5}$



2. $\tan A = \frac{21}{20} = \frac{3}{4}$



3. $\cos C = \frac{48}{50} = \frac{24}{25}$



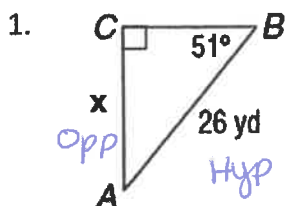
Use your calculator to find the value of each trig function. Round your answers to three decimal places.

1. $\tan 45^\circ = 1$

2. $\cos 19^\circ = 0.945$

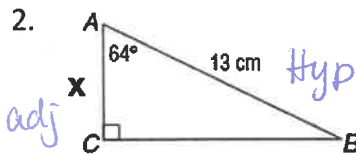
3. $\sin 75^\circ = 0.966$

Use the correct trig function to find the indicated side length. Round your answers to the nearest whole number.



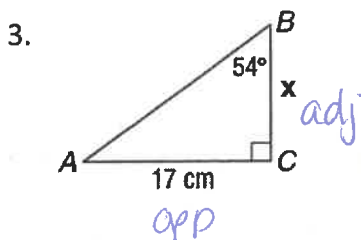
$\sin 51 = \frac{x}{26}$

$x = 20$



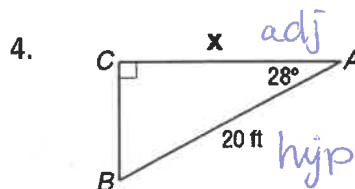
$\cos 64 = \frac{x}{13}$

$x = 6$



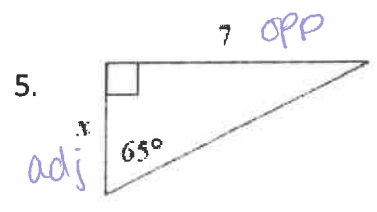
$\tan 54 = \frac{17}{x}$

$x = 12$



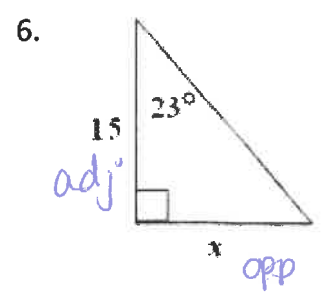
$\cos 28 = \frac{x}{20}$

$x = 18$



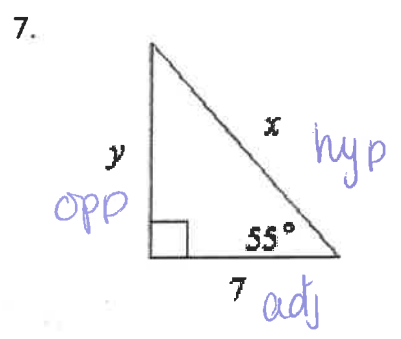
$$\tan 65 = \frac{7}{x}$$

$$x = 3$$



$$\tan 23 = \frac{x}{15}$$

$$x = 6$$

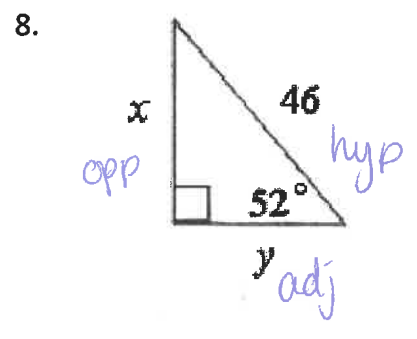


$$\tan 55 = \frac{y}{7}$$

$$y = 10$$

$$\cos 55 = \frac{7}{x}$$

$$x = 12$$



$$\sin 52 = \frac{x}{46}$$

$$x = 36$$

$$\cos 52 = \frac{y}{46}$$

$$y = 28$$



Solving Using Trig Ratios

Determining which ratio to use:

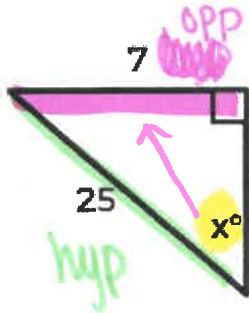
1. Circle the angle
2. Label the sides that are marked in reference to that angle
 - 3 possible pairings:
 - opp and hyp
 - adj and hyp
 - opp and adj
3. Choose the correct function based on the pairing

$$\sin = \frac{\text{opp}}{\text{hyp}} \quad \cos = \frac{\text{adj}}{\text{hyp}} \quad \tan = \frac{\text{opp}}{\text{adj}}$$

4. Set-up and solve your equation for the missing side or angle

$$\text{trig ratio (angle)} = \frac{\text{side}}{\text{side}}$$

Using Sin:

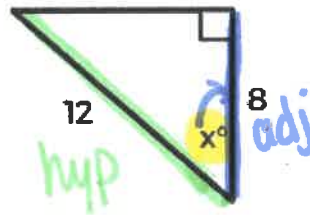


$$(\sin x) = \left(\frac{7}{25}\right)$$

$$x = \sin^{-1}(7/25)$$

$$x = 16.3^\circ$$

Using Cos:

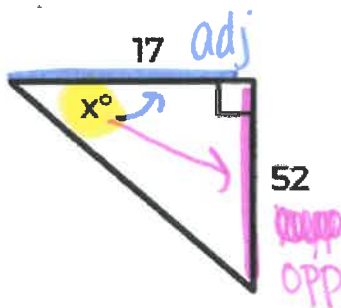


$$(\cos x) = \left(\frac{8}{12}\right)$$

$$x = \cos^{-1}(8/12)$$

$$x = 48.2^\circ$$

Using Tan:

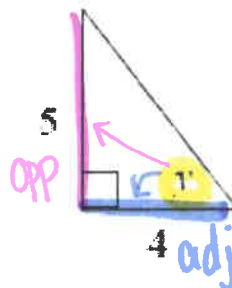


$$(\tan x) = \left(\frac{52}{17}\right)$$

$$x = \tan^{-1}(52/17)$$

$$x = 71.9^\circ$$

Now you try....



$$(\tan y) = \left(\frac{5}{4}\right)$$

$$y = 51.3^\circ$$

Solving with Trig Practice:

20

Use your calculator and the inverse trig ratio to find the missing angle. Round to the nearest whole number.

1. $\sin A = 0.7624$

$A = \underline{50}$

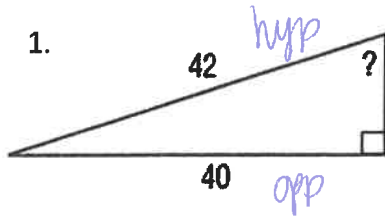
2. $\cos L = 0.8691$

$L = \underline{30}$

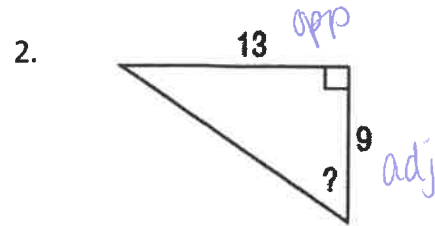
3. $\tan H = 1.3024$

$H = \underline{52}$

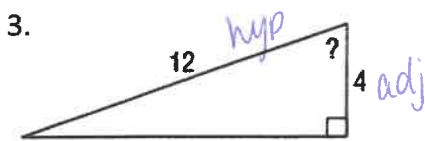
Use the correct trig function to find the missing angles. Round your answers to the nearest whole number.



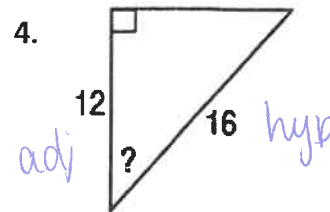
$\sin x = \frac{40}{42}$ $x = 72^\circ$



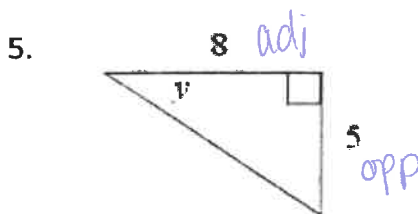
$\tan x = \frac{13}{9}$ $x = 55^\circ$



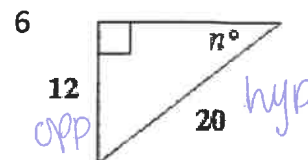
$\cos x = \frac{4}{12}$ $x = 71^\circ$



$\cos x = \frac{12}{16}$ $x = 41^\circ$



$\tan y = \frac{5}{8}$ $y = 32^\circ$



$\sin n = \frac{12}{20}$ $n = 37^\circ$



Unit 7: Right Triangle Review

Simplify each radical

1. $\sqrt{240}$

$4 \sqrt{15}$

(Handwritten prime factorization: $2^2 \cdot 2 \cdot 3 \cdot 2 \cdot 5$)

2. $5\sqrt{108}$

$30\sqrt{3}$

(Handwritten prime factorization: $2^2 \cdot 3^2 \cdot 3$)

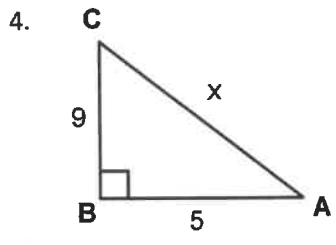
3. $\sqrt{64x^5}$

$8x^2\sqrt{x}$

(Handwritten prime factorization: $2^6 \cdot x^4 \cdot x$)

| | | |
|----------------------------|-------------------|---|
| Pythagorean Theorem | $a^2 + b^2 = c^2$ | $a, b \rightarrow$ legs $c \rightarrow$ hypotenuse |
|----------------------------|-------------------|---|

Find the missing sides using Pythagorean Theorem. Leave your answer in radical form.

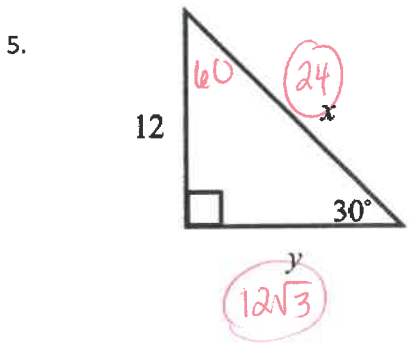


$9^2 + 5^2 = x^2$
 $81 + 25 = x^2$
 $\sqrt{106} = \sqrt{x^2}$

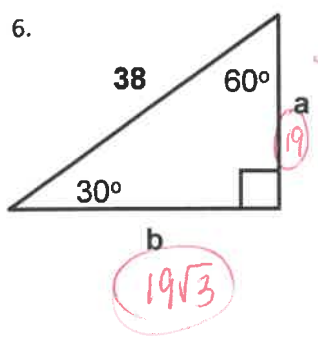
$x = \sqrt{106}$

| | | |
|--------------------------------|--|---|
| Special right triangles | 45-45-90 $x \quad x \quad x\sqrt{2}$ | 30-60-90 $x \quad x\sqrt{3} \quad 2x$ |
|--------------------------------|--|---|

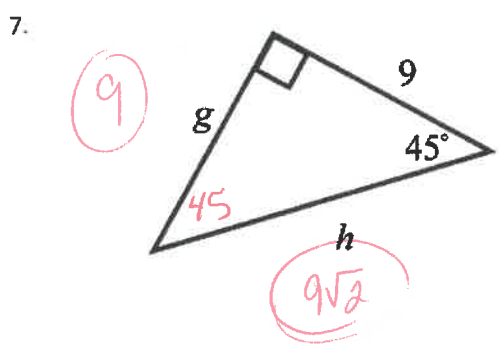
Find the missing sides using the special right triangle patterns



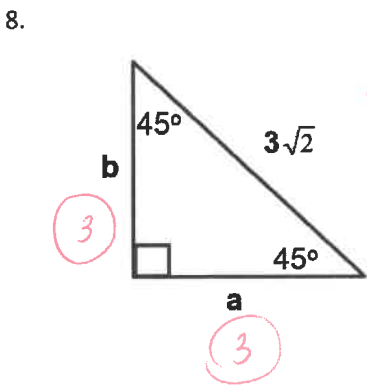
| | | |
|----|--------------|----|
| 30 | 60 | 90 |
| x | $x\sqrt{3}$ | 2x |
| 12 | $12\sqrt{3}$ | 24 |



| | | |
|----|--------------|----|
| 30 | 60 | 90 |
| x | $x\sqrt{3}$ | 2x |
| 19 | $19\sqrt{3}$ | 38 |



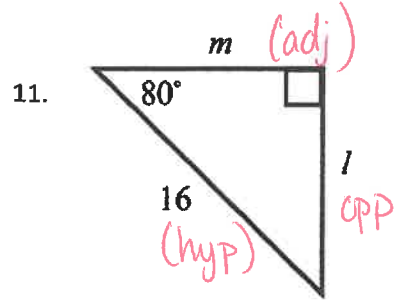
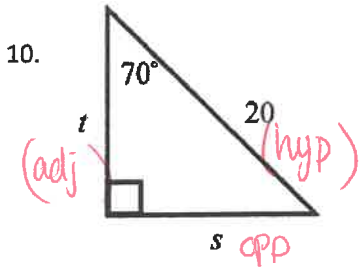
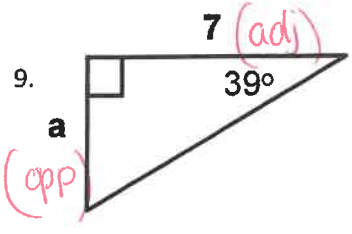
| | | |
|----|----|-------------|
| 45 | 45 | 90 |
| x | x | $x\sqrt{2}$ |
| 9 | 9 | $9\sqrt{2}$ |



| | | |
|----|----|-------------|
| 45 | 45 | 90 |
| x | x | $x\sqrt{2}$ |
| 3 | 3 | $3\sqrt{2}$ |

| Trig Ratios | Sine $\frac{\text{opp}}{\text{hyp}}$ | Cosine $\frac{\text{adj}}{\text{hyp}}$ | Tangent $\frac{\text{opp}}{\text{adj}}$ |
|-------------|---|---|--|
|-------------|---|---|--|

Find the missing sides using trig ratios. Round to the nearest tenth.



$$\tan(39) = \frac{a}{7}$$

$$\sin(70) = \frac{s}{20}$$

$$\cos(70) = \frac{t}{20}$$

$$\sin(80) = \frac{l}{16}$$

$$\cos(80) = \frac{m}{16}$$

$$a = 5.7$$

$$s = 18.8$$

$$t = 6.8$$

$$l = 15.8$$

$$m = 2.8$$

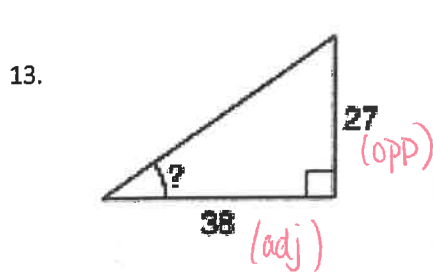
12. A ladder is leaning up against a wall making a 45° angle with the ground. If the ladder is 4 feet from the base of the wall, how long is the ladder? How high does it reach up the wall?



* Can use 45-45-90 or trig ratios

$$x = 4\sqrt{2} \quad y = 4$$

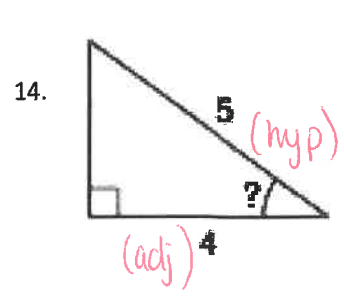
Find the missing angles using trig ratios. Round to the nearest tenth.



$$\tan(x) = \frac{27}{38}$$

$$x = \tan^{-1}(27/38)$$

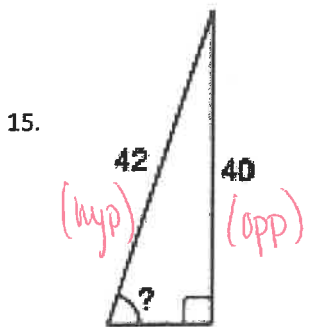
$$x = 35.4$$



$$\cos(x) = \frac{4}{5}$$

$$x = \cos^{-1}(4/5)$$

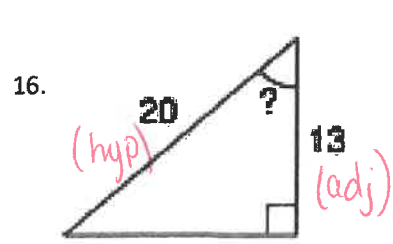
$$x = 36.9$$



$$\sin(x) = \frac{40}{42}$$

$$x = \sin^{-1}(40/42)$$

$$x = 72.2$$



$$\cos(x) = \frac{13}{20}$$

$$x = \cos^{-1}(13/20)$$

$$x = 49.5$$



Name: _____

Unit 7 Reflection

| | |
|--|---|
| <p>What skills went well in this unit? Circle all the skills that you were successful with on the test</p> <p>Reducing Radicals</p> <p>Pythagorean Theorem</p> <p>Special Right Triangles (45-45-90 & 30-60-90)</p> <p>Trigonometry</p> | <p>What were you most proud of in this unit?</p> <p>Organization</p> <p>Completion of practice problems (HW)</p> <p>Participation</p> <p>Positive attitude</p> <p>Showing growth</p> <p>Other: _____</p> |
| <p>Looking at the skills above. What skills do you still need more practice with moving forward (use both columns)?</p> | |
| <p>Action plan:</p> | |