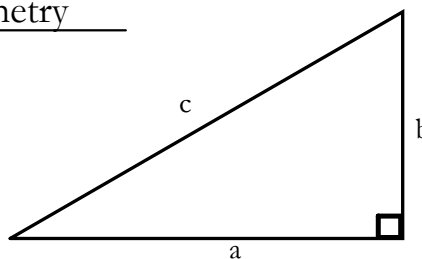


Chapter 3 - Right Triangle Trigonometry

Review...

Recall :

Pythagorean Theorem:  $c^2 = a^2 + b^2$

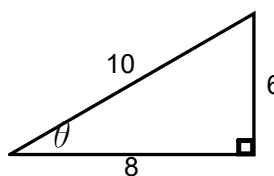


(This only works for **right angle triangles**.  $a$  and  $b$  are interchangeable, but  $c$  must be hypotenuse/opposite the right angle.)

**Primary Trigonometric Ratios:**

(These also **only** work for right angle triangles.)

$\theta$  (Theta) is a variable commonly used for angles.



\*\*We need to label our sides in order to use the primary trig ratios...

$\sin \theta =$

$\cos \theta =$

$\tan \theta =$

Using your calculator:

$\sin \theta, \cos \theta, \tan \theta =$  ratio (written as a fraction or a decimal. Has no units)

Shift or 2nd function to find angle when ratio is obtained

$\sin^{-1}(\text{ratio}) = \theta$

$\cos^{-1}(\text{ratio}) = \theta$

$\tan^{-1}(\text{ratio}) = \theta$

Example 1: Determine the value of each trigonometric ratio to 4 decimal places.

a)  $\sin 33^\circ =$

b)  $\cos 27^\circ =$

c)  $\tan 46^\circ =$

Example 2- Determine the measure of  $\angle A$  to the nearest degree.

a)  $\sin A = 0.8660$   
 $\sin^{-1}(0.8660) =$  \_\_\_\_\_

b)  $\cos A = 0.7071$

c)  $\tan A = \frac{5}{16}$

Example 3: Determine the value of  $x$  in each proportion.

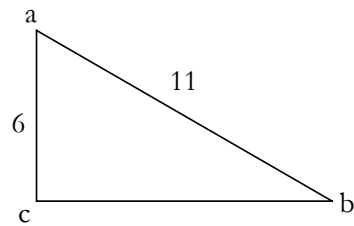
a)  $\frac{x}{8} = \frac{15}{6}$

b)  $\frac{12}{x} = \frac{16}{12}$

**Solving Right Triangles: With two sides given**

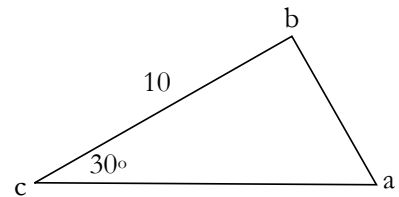
- Use the Pythagorean theorem to find the missing side
- Choose an angle and label the triangle (opp, adj and hyp)
- Choose a ratio to use (Sin, Cos or Tan)
- Use your calculator to determine the desired angle
- Remaining angle =  $90^\circ$  - Obtained angle

Example 1: Solve the triangle abc for all sides and angles.

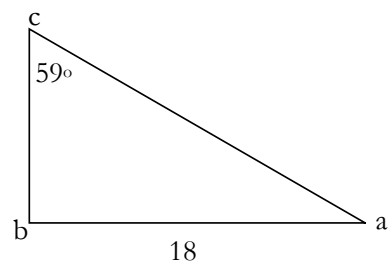
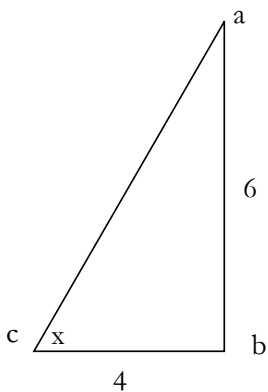


Your turn...

Determine the length of AB, AC to the nearest tenth of a centimetre.



Example 2: Solve Each Triangle.



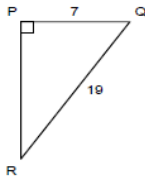
\*\*This practice sheet is for your own good assuming you need it. This is grade 10 review and you should understand how to find both a sidelength and angle using Sin, Cos or Tan.

Chapter Trigonometry review assignment #1

Please show all your work. You will only receive half marks if no work is shown.

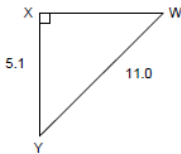
\*\*Note that answers are given for each question to ensure you have done them properly...

- Determine the measure of  $\angle Q$  to the nearest tenth of a degree.



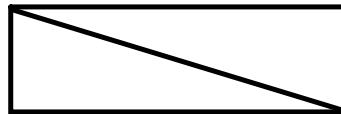
68.4°

- Determine the measure of  $\angle Y$  to the nearest tenth of a degree.



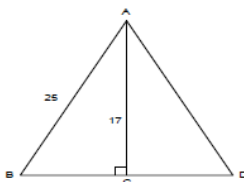
62.4°

- A rectangle is 5.1 cm wide and each diagonal is 9.3 cm long. What is the measure of the angle between a diagonal and the shorter side of the rectangle to the nearest tenth of a degree?



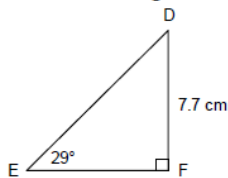
56.7°

- Determine the measure of  $\angle B$  to the nearest tenth of a degree.



42.8°

- Determine the length of DE to the nearest tenth of a centimeter.

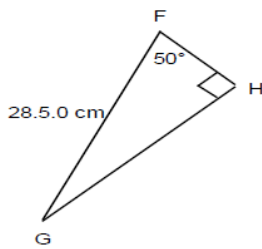


15.9 cm

6. A balloon is flying at the end of a 170-m length of string, which is anchored to the ground. The angle of inclination of the string is  $50^\circ$ . Calculate the height of the balloon to the nearest meter.

130.23m

7. Solve this right triangle. Give the measures to the nearest tenth.

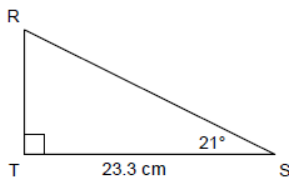


$\angle G = 40^\circ$ ;  $GH = 21.8$  cm;  $FH = 18.3$  cm

8. A water taxi leaves its dock, and travels 7 km due north to pick up medical supplies. It then travels 15 km due east to drop off the supplies at a hospital. To the nearest degree, what is the measure of the angle between the path it took due east and the path it will take to return directly to its dock?

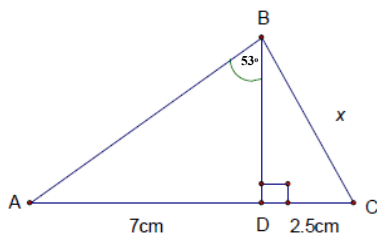
$25^\circ$

9. Determine the area of  $\triangle RST$  to the nearest square centimeter.



$104 \text{ cm}^2$

10. Find the unknown side (x).



5.84cm