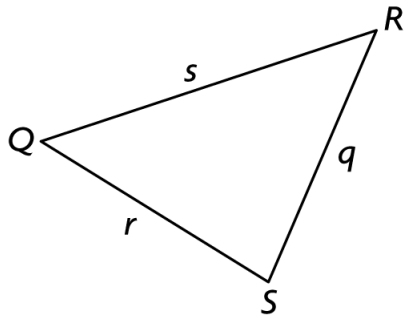


**Multiple Choice** - Choose the letter of the best response.

1. Which expression is true for  $\triangle QRS$ ?



A)  $\cos Q = \frac{r^2 + s^2 + q^2}{2rs}$

B)  $\frac{\sin Q}{q} = \frac{r}{\sin R} = \frac{\sin S}{s}$

C)  $r^2 = q^2 + s^2 - 2qs \cos R$

D)  $\frac{r}{\sin R} = \frac{s}{\sin Q} = \frac{q}{\sin S}$

2. Solve for the unknown side length. Round your answer to one decimal place.

$$\frac{q}{\sin 30^\circ} = \frac{10.0}{\sin 80^\circ}$$

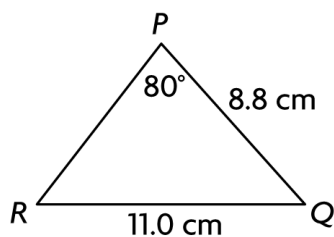
A) 4.0

B) 5.1

C) 9.7

D) 20.3

3. Determine the measure of  $\angle R$  to the nearest degree.



A)  $50^\circ$

B)  $52^\circ$

C)  $54^\circ$

D)  $56^\circ$

4. What information do you need to know about an acute triangle to use the cosine law?

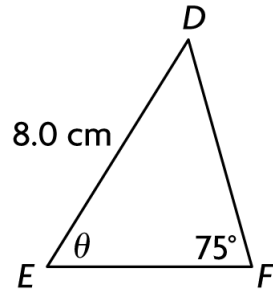
A) two angles and any side

B) two sides and any angle

C) all the sides

D) all the angles

5. How you would determine the indicated angle measure, if it is possible?



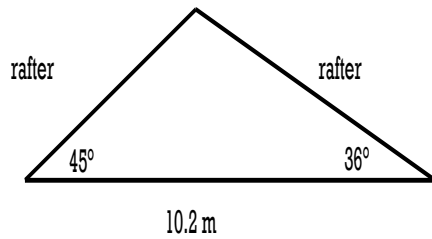
- A) primary trigonometric ratios                      B) the sine law  
C) the cosine law                                        D) not possible

**Long Answer** – Show all workings for full credit.

6. Solve  $\triangle ABC$  given the following:  $\angle B = 62^\circ$ ,  $a = 12.5$ ,  $c = 15.7$

[6]

7. How long, to the nearest tenth of a metre, is the right rafter in the roof shown? [4]



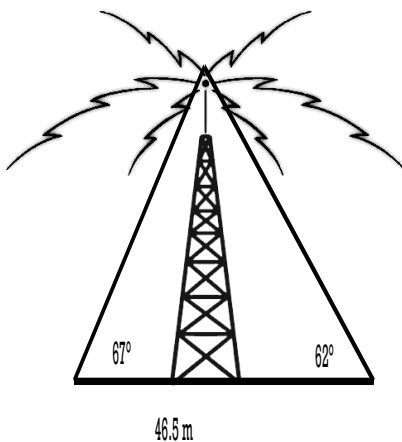
8. In a parallelogram, two adjacent sides measure 17 cm and 14 cm. The shorter diagonal is 11 cm. Draw a diagram and determine, to the nearest degree, the measure of the smaller angle in the parallelogram. [4]

9. Sketch a triangle that corresponds to the equation. Then, determine the third angle measure and the third side length. [4]

$$\frac{10.4}{\sin 33^\circ} = \frac{18.6}{\sin 77^\circ}$$

10. Two airplanes leave the Fort Chipewyan airport in Alberta at the same time. One airplane travels at 360 km/h. The other airplane travels at 430 km/h. About 30 min later, they are 150 km apart. Draw a diagram and determine the angle between their paths, to the nearest degree. **[4]**

12. A radio tower is supported by two wires on opposite sides. On the ground, the ends of the wires are 46.5 m apart. The angles of elevation for the wires are  $62^\circ$  and  $67^\circ$  respectively. Determine the length of the longest wire and the height of the tower to the nearest tenth of a metre. **[6]**



**FORMULAE**

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$