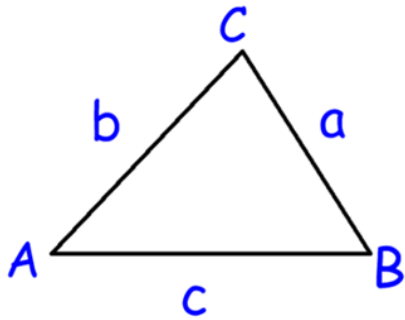Name: Date:
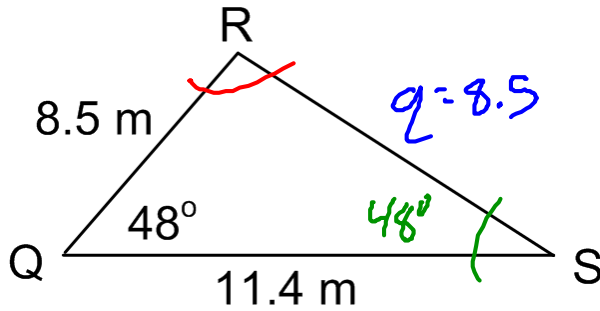
Cosine Law Worksheet

Make sure your calculator is in the proper mode - degrees (deg).
Diagrams are <u>not</u> to scale!

1. Use the diagram below to fill in the blanks and complete the Cosine Law.

C

b   a

A   B
    c

$$c^2 = \underline{a}^2 + \underline{b}^2 - 2\underline{a}\ \underline{b}\cos(\underline{C})$$

2. "Solve" the triangle below (find the values of all missing sides and angles)

R

8.5 m $q = 8.5$ $q^2 = r^2 + s^2 - 2rs\cos$

48°   48°

Q   11.4 m   S

$\angle S$

$q^2 = 11.4^2 + 8.5^2 - 2(11.4)(8.5)\cos 48°$ $\dfrac{\sin S}{8.5} = \dfrac{\sin 48}{8.5}$

$q^2 = 202.21 - 129.66$ $S = 48°$

$q^2 = 72.53$

$q = 8.5$ $R = 84°$

3. "Solve" the triangle below. (find the values of all missing sides and angles)

M

15.7 m

10.3 m

108°

N

9.1 m

O

$$\frac{\sin O}{10.3} = \frac{\sin 108}{15.7}$$

$$\sin O = \frac{10.3 \times \sin 108}{15.7}$$

$$\sin O = 0.6239$$

$$O = 39°$$

$$M = 33°$$
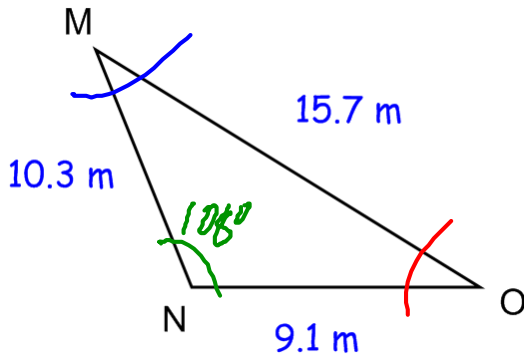
$$\cos N = \frac{m^2 + o^2 - n^2}{2mo}$$

$$= \frac{9.1^2 + 10.3^2 - 15.7^2}{2 \times 9.1 \times 10.3}$$

$$= \frac{-57.59}{187.46}$$

$$\cos N = -0.3072$$

$$N = 108°$$