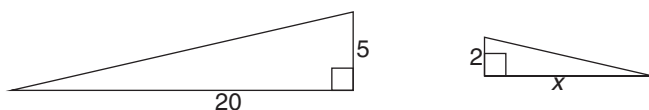# Appendix

Lesson 3.1: The Tangent Ratio

Practice – I

1. The following two triangles are similar.

    a. Write the two pairs of corresponding side lengths.
        5 and 2, 20 and x

    b. In the first triangle, the ratio of sides can be written as $\frac{20}{5} = 4$. What is the
        corresponding ratio for the second triangle? Explain.
        The two triangles are similar, so the ratio of corresponding side lengths must be equal.
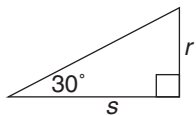   This means $\frac{x}{2} = 4$.

    c. Solve for x.

    $$\frac{x}{2} = 4$$

    $$\frac{x}{2} \cdot 2 = 4 \cdot 2$$

    $$x = 8$$

2. A triangle with sides p and q is similar to the triangle shown below, where side p corresponds to side r, and side q corresponds to side s.

a. If $\dfrac{p}{q} = 0.58$, what must $\dfrac{r}{s}$ equal?

Similar triangles have the same ratio of corresponding side lengths, so $\dfrac{r}{s} = 0.58$.

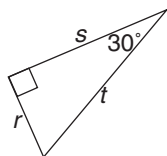b. If $\dfrac{p}{q} = 0.58$, and $s = 7$, what must r equal?

$$\frac{r}{s} = 0.58$$

$$\frac{r}{7} = 0.58$$

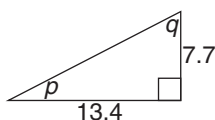$$\frac{r}{7} \cdot 7 = 0.58 \cdot 7$$

$$r = 4.06$$

3. Use the table to state a ratio of sides for the following triangle. Explain what the ratio represents.

0.58 is the value produced by dividing the length of side r (opposite) by the length of side s (adjacent).

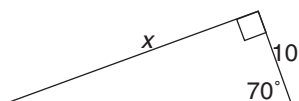4. Use the table to state the value of each variable.

$$\frac{7.7}{13.4} = 0.58, \text{ so } p \doteq 30°$$

$$\frac{13.4}{7.7} = 1.74, \text{ so } q \doteq 60°$$

θ	$\dfrac{\text{length opposite } \theta}{\text{length adjacent to } \theta}$ ratio (approximate values, rounded to the nearest hundredth)
5°	0.09
10°	0.18
15°	0.27
20°	0.36
25°	0.47
30°	0.58
35°	0.70
40°	0.84
45°	1
50°	1.19
55°	1.43
60°	1.73
65°	2.14
70°	2.75
75°	3.73
80°	5.67
85°	11.43

5. Use the table to determine the unknown length, x, to the nearest tenth, in the diagram.

Look for the ratio that corresponds to 70˚ in the table.

$$\frac{\text{length opposite } 70°}{\text{length adjacent to } 70°} = 2.75$$

$$\frac{x}{10} = 2.75$$

$$\frac{x}{10} \cdot 10 = 2.75 \cdot 10$$

$$x = 27.5$$

Please return to *Unit 3: Trigonometry Lesson 3.1* in the *Module* to continue your exploration.