IM2 Problem Set 2.2 - Working with Sides and Angles in Triangles

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BIG PICTURE of this UNIT:	• How do I determine the measure of angles in geometric shapes, without direct measurement? • How do I solve for sides or angles in right triangles? • How can I solve problems that require geometric models using right triangles??

Part 1 - Skills Review

1. CONCEPT REVIEW #1: When we use the **tan function** on the calculator,
    a. What does the INPUT represent?
    b. What does the OUTPUT represent?

2. CONCEPT REVIEW #2: When we use the **tan⁻¹ function** on the calculator,
    a. What does the INPUT represent?
    b. What does the OUTPUT represent?

3. Determine the angle that the line $y = \frac{2}{3}x + 1$ makes with the *x*-axis.

4. Determine the angle that the line $6x + 2y = 8$ makes with the *x*-axis.

5. Mr. S. drew a line that rises at an angle of 56.3° and goes through the point (5,-2). Write the equation of this line in point-slope form as well as standard form.

Part 2 - Concept EXTENSION: Lines to Triangles

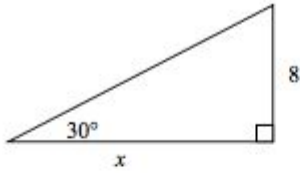Here are three diagrams. The line on the first diagram has the equation $y = \frac{3}{4}x + 3$.

How are the diagrams the same? How are the the diagrams different?
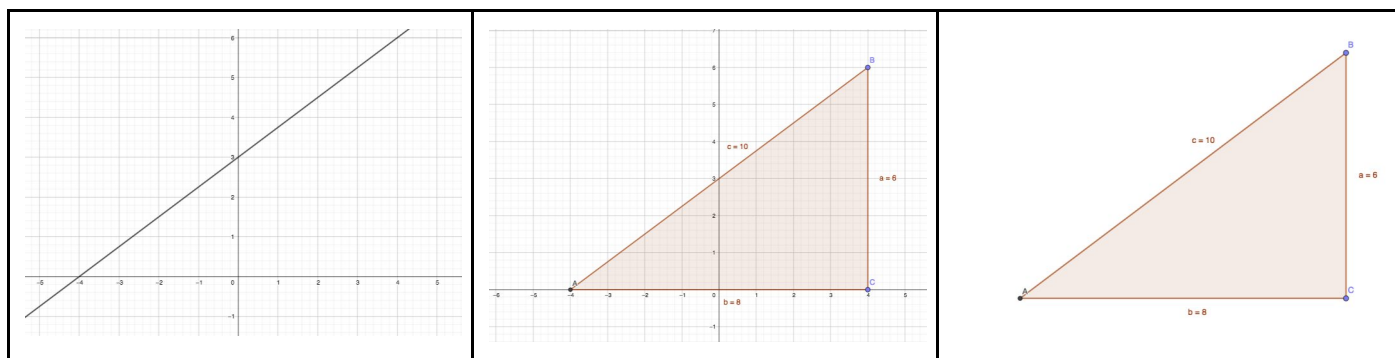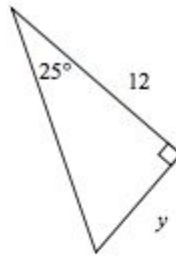
Part 3 - The Tangent Ratio in Triangles

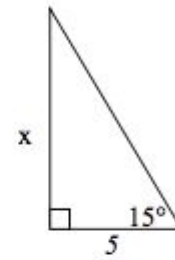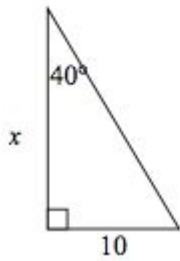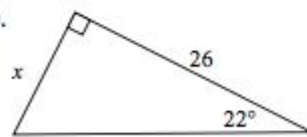1. Use the Tangent Ratio and Pythagorean Theorem to find the missing side and hypotenuse.
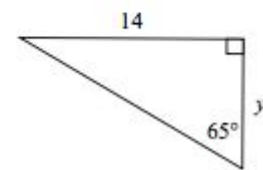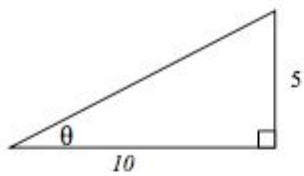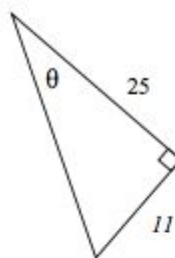
a.

b.

c.

d.

e.

f.

2. Use the Tangent Ratio to find the missing angle θ and hypotenuse of each.

d.

e.

f.
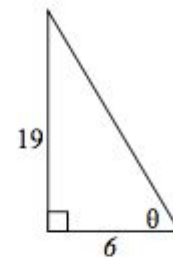
g.
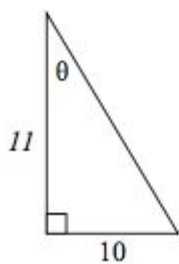
h.
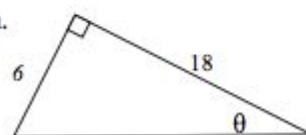
i.

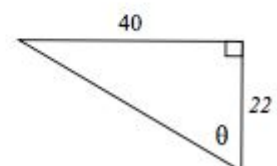3. State the slope ratio for the following triangles and then find the measure of the angle as well.

a.

7

35

θ

b.

25

5

θ

c.

10

2

θ
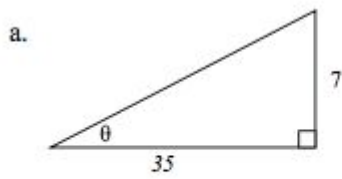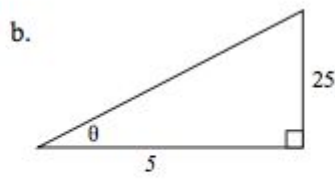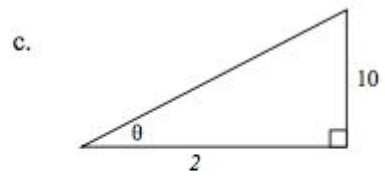
Slope Ratio:_____   Slope Ratio:_____   Slope Ratio:_____

4. What is the measure of an angle that is complementary to:
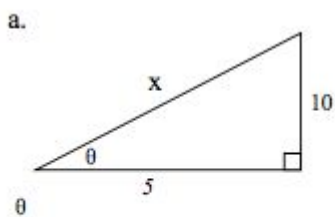
    a. 11°
    b. 22°
    c. 45°
    d. 70°

5. Draw a triangle with a slope ratio of:

    a. $\frac{5}{2}$
    b. $\frac{1}{5}$
    c. $\frac{2}{7}$
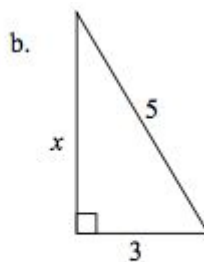
6. Now, find the angle of a line that has a slope ratio of
    a. $\frac{5}{2}$
    b. $\frac{1}{5}$
    c. $\frac{2}{7}$

7. You now know everything you need to know in order to find all missing information about a right triangle. Use this knowledge to solve for all of the missing parts of each triangle

a.

x

10

5

θ

θ

b.

5

x

3

x = _____
θ = _____
y = _____

x = _____
θ = _____
y = _____