Note: This is NOT a practice exam. It is a collection of problems to help you review some of the material for the exam and to practice some kinds of problems. This collection is not necessarily exhaustive; you should expect some problems on the exam to look different from these problems.

Section 11.1

Textbook p. 802 # 3, 4

1. Use a compass and protractor to construct the triangle *STP* with the following characteristics: *ST* = 1.25 inch, *SP* = 2 inches, and angle *S* = 40°. What is the measure of angle *T*?

2. Using a straightedge, ruler, compass, and protractor as necessary, show why it is impossible to construct a triangle with sides of length 1.5 inches, 2.75 inches, and 5 inches.

3. Carefully construct triangle *DEF* with *DE* = 4 cm, *EF* = 6 cm, and angle *DEF* = 45º. Measure and record on your sketch the length of the third side and the measure of the other two angles.

4. Carefully construct triangle *JPS* with *JP* = 3 inches, angle *SJP* = 40º, and angle *JPS* = 75º. Measure and record on your sketch the length of the other two sides (rounded to the nearest eighth-inch).

5. True-False. A statement should be marked "false" if it is never true or if it is not necessarily true. If a statement is only sometimes true, mark it as "false." Explain briefly why any true statements are true, and explain briefly why any false statements are false or give a counter example.

a. _____ If two right triangles have congruent hypotenuses, then the triangles are congruent

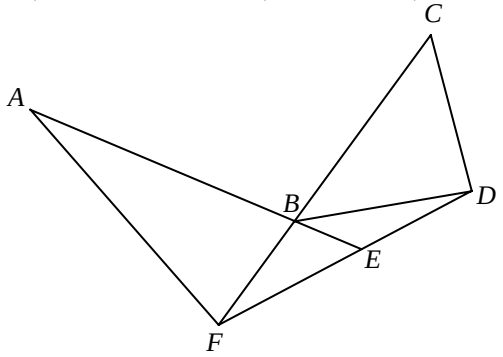
b. _____ If $\Delta ABC \cong \Delta DEF$, then $\overline{CB} \cong \overline{EF}$.

c. _____ In ΔSTU and ΔLMN, if $\overline{ST} \cong \overline{LM}$, $\angle T \cong \angle M$, and $\angle U \cong \angle N$, then the triangles must be congruent.

d. _____ If the hypotenuse of one right triangle is twice the length of the hypotenuse of a second right triangle, then the triangles are similar.

6. Can you find a pair of congruent triangles in this figure? How do you know they are congruent? Potentially useful facts about the figure are given.

$\overline{CD} \cong \overline{BD}$, $\angle BAF \cong \angle BFE$, $\overline{AF} \cong \overline{DF}$, $\angle BEF \cong \angle BCD$, $\overline{FE} \cong \overline{ED}$



ANSWERS Section 11.1

Answers to Chapter Test questions are in the back of the text.

1. 103°

2. The two short sides cannot intersect if the third side is 5 inches long.

3. Side *DF* is 4.2 cm long. Angle *F* is 42°, and angle *D* is 93°.

4. *JS* = 3.25 inches, and *SP* = 2.125 inches.

5. True-False. A statement should be marked "false" if it is never true or if it is not necessarily true. If a statement is only sometimes true, mark it as "false." For "true" statements, explain briefly why they are true. For "false" statements, explain why they are false or give a counter-example.

a. False If two right triangles have congruent hypotenuses, then the triangles are congruent.

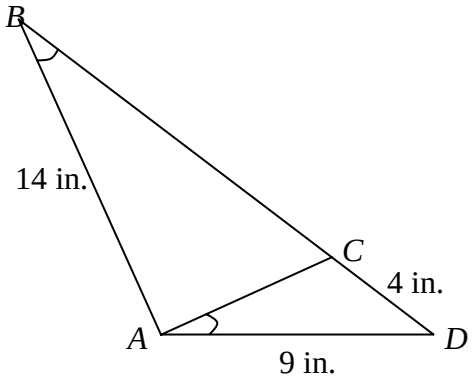
b. True If $\Delta ABC \cong \Delta DEF$, then $\overline{CB} \cong \overline{EF}$.

c. True (can get ASA) In ΔSTU and ΔLMN, if $\overline{ST} \cong \overline{LM}$, $\angle T \cong \angle M$, and $\angle U \cong \angle N$, then the triangles must be congruent.

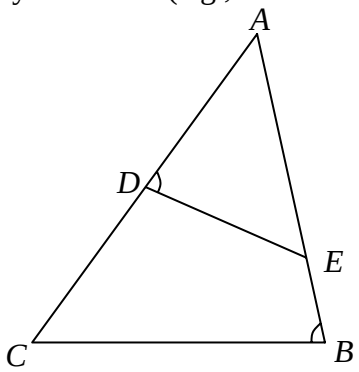
d. False If the hypotenuse of one right triangle is twice the length of the hypotenuse of a second right triangle, then the triangles are similar.

6. Can show $\Delta AEF \cong \Delta FCD$ by ASA.

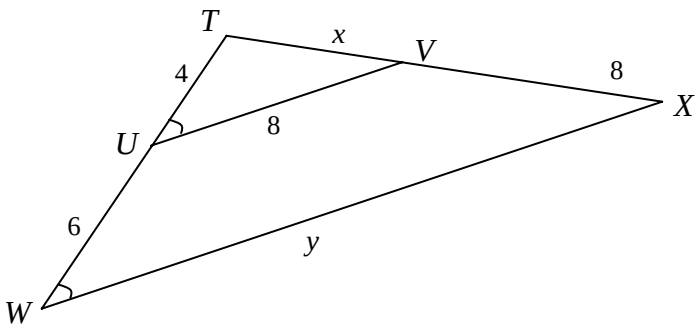
Section 11.3
Textbook p. 802 # 10, 11, 12, 15, 16
1. Find the measure of $\overline{BC}$.



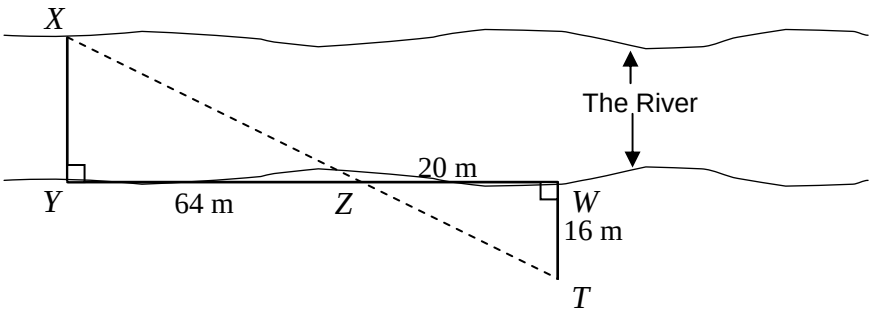
2. In this figure are any triangles similar? Why or why not? If you identify any similar triangles, write a similarity statement (e.g., $\Delta SAM \sim \Delta BOW$).



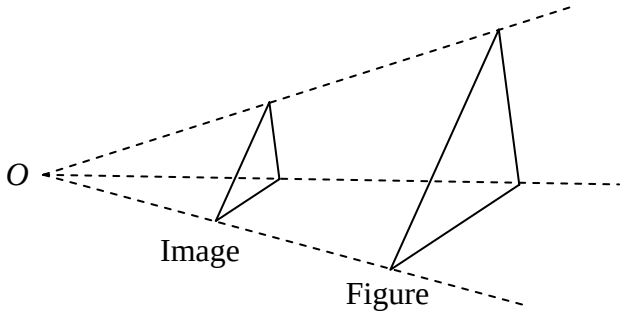
3. Find x and y in the figure below.



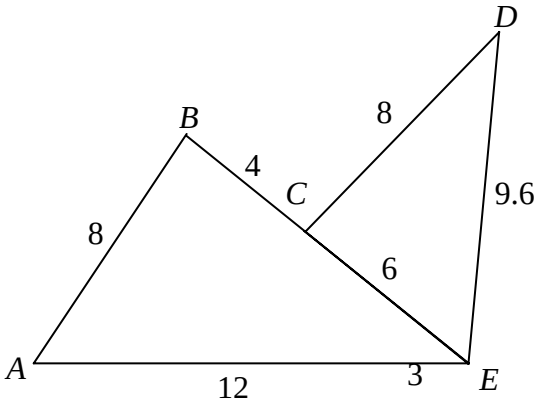
4. Find the distance across the river in the sketch below. (Pretend it is drawn to scale ☺)



5. Without measuring anything, what can you say about the scale factor for the projection illustrated here? Be as specific as you can without knowing or assuming any measurements.

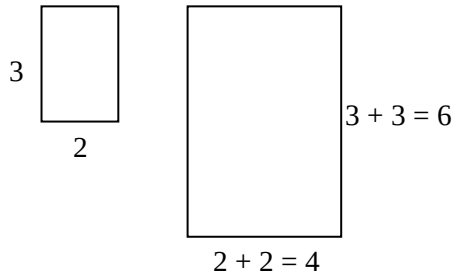


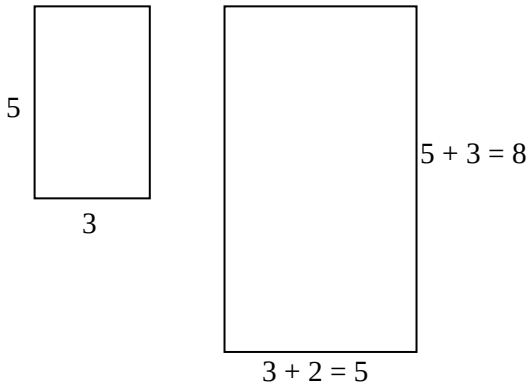
6. In this figure are any triangles similar? Why or why not? If you identify any similar triangles, write a similarity statement (e.g., $\Delta SAM \sim \Delta BOW$).



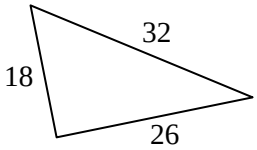
7. Create an example of two quadrilaterals in which the sides of one are all one third the length of the sides of the other, yet the quadrilaterals are *not* similar. Label the lengths of the sides.

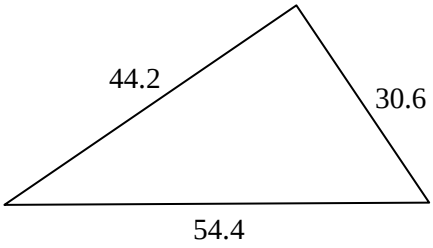
8. Wendy was talking about making similar rectangles. She said that by adding 2 units to the width and 3 units to the length, she ended up with similar rectangles. Two examples are shown here. What can you say about Wendy's idea?





9. Are these triangles similar? Explain how you know.





ANSWERS Section 11.3
Answers to Chapter Test questions are in the back of the text.

1. $BC = 16.25$ in

2. $\Delta ADE \sim \Delta ABC$ by AA similarity.

3. $x = 5.33$ and $y = 20$

4. 51.2 m

5. We can say that the scale factor is greater than 0 and less than 1. We can estimate that the scale factor is about one-half.

6. No similar triangles. The ratios of the lengths of the sides are not equal.

7. For example: a *square* with sides of 3 units each and a *non-square rhombus* with sides of one unit each.

8. The first example works, but the second one doesn't. Wendy is wrong.

9. Triangles are similar by SSS.

Section 10.1
Textbook p 722 # 1, 2, 3
1. Calculate the measurement conversion indicated.

A. 40 pints = _____ gallons B. 17 cups = _____ quarts C. 8.5 pints = _____ cups

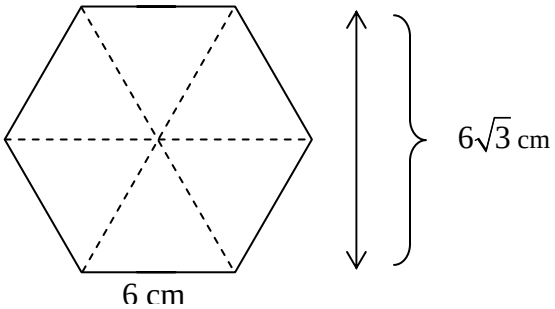
ANSWERS Section 10.1
Answers to Chapter Test questions are in the back of the text.
1. A. 5 gallons B. 4.25 quarts C. 17 cups

Section 10.2
Textbook p 722 # 6, 7 (omit the circle)

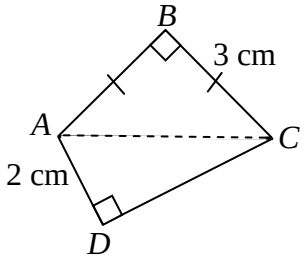
1. Calculate the measurement conversion indicated.
A. 50 square inches = _____ square feet

B. 3 square meters = _____ square centimeters

2. Find the area of the regular hexagon shown here. Explain completely how you found the area. (Hint: you may assume that the small triangles are isosceles triangles.)



3. Find the area of the quadrilateral *ABCD*. (Hint: you can find the measure of diagonal *AC*.) Show your work, and explain with words your strategy.



ANSWERS Section 10.2
Answers to Chapter Test questions are in the back of the text.

1. A. 0.35 sq feet B. 30,000 sq cm
2. $54\sqrt{3}$ cm^2
3. $\frac{9}{2}+\sqrt{14}$ cm^2