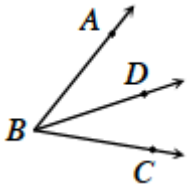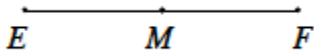## Review & Preview 7.2.1

7-54. Use the information given for each diagram below to solve for *x*. Show all work.

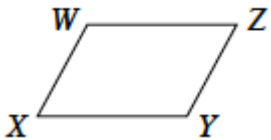a. $\overrightarrow{BD}$ bisects ∠*ABC* . (Remember that this means it divides the angle into two equal parts.) If *m*∠*ABD* = 5*x* −10° and *m*∠*ABC* = 65°, solve for *x*.

b. Point *M* is a midpoint of $\overline{EF}$. If *EM* = 4*x* − 2 and *MF* = 3*x* + 9, solve for *x*.

c. *WXYZ* below is a parallelogram. If *m*∠*W* = 9*x* − 3° and *m*∠*Z* = 3*x* + 15°, solve for *x*.

7-55. Jamal used a hinged mirror to create a regular polygon like you did in Lesson 7.1.4.

a. If his hinged mirror formed a 72° angle and the core region in front of the mirror was isosceles, how many sides did his polygon have?

b. Now Jamal has decided to create a regular polygon with 9 sides, called a nonagon. If his core region is again isosceles, what angle is formed by his mirror?

7-56. Sandra wants to park her car so that she optimizes the distance she has to walk to the art museum and the library. That is, she wants to park so that her total distance directly to each building is the shortest. Find where she should park. Homework Help ✎

art museum — 50 feet
street / 80 feet
lib-rary — 60 feet
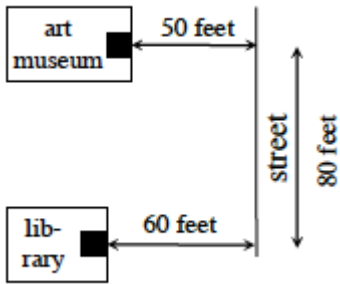
7-57. Write an equation for each of the following sequences. Homework Help ✎

a. 40, 60, 80, ...

b. 3, $\dfrac{3}{2}$, $\dfrac{3}{4}$, ...

7-58. Earl (from Chapter 6) still hates to wash the dishes and take out the garbage. He found his own weighted coin, one that would randomly land on heads 30% of the time. He will flip a coin once for each chore and will perform the chore if the coin lands on heads. Homework Help ✎

a. What is the probability that Earl will get out of doing both chores?

b. What is the probability that Earl will have to take out the garbage, but will not need to wash the dishes?
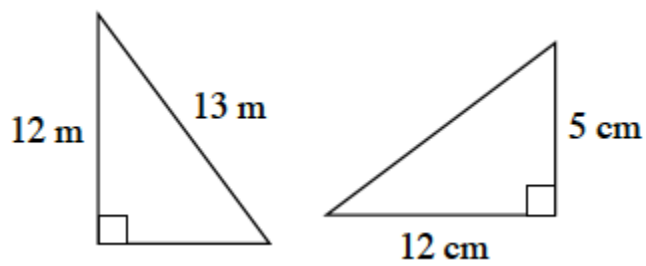
7-59. Which pairs of triangles below are congruent and/or similar? For each part, explain how you know using an appropriate triangle congruence or similarity condition. Note: The diagrams are not necessarily drawn to scale. Homework Help ✎
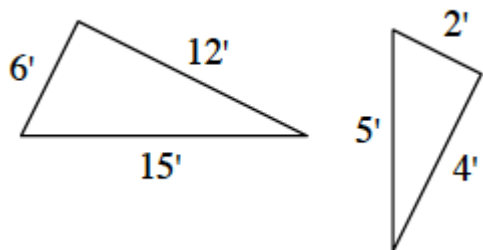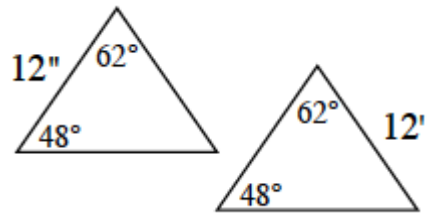
a.
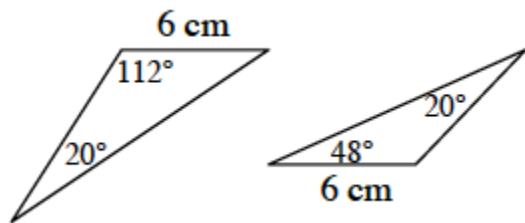
b.

c.

d.

7-60. For part (b) of problem 7-59, explain how the triangles are congruent using a sequence of rigid transformations. Homework Help ✎