



In these activities you will use interactive mobiles to explore equations. After completing the activities, discuss and/or present your findings to the rest of the class.



### Activity 1 [Page 1.3]

1. Create a mobile with three triangles and one square on the left arm and one triangle and two squares on the right arm.
  - a. If the total weight goal is 10, find the weight of a triangle and the weight of a square.
  
  
  
  
  
  
  
  
  
  
  - b. If you double the number of triangles and squares on each side of the mobile, what is the new total weight?
  
  
  
  
  
  
  
  
  
  
  - c. Which of the following equations could be associated with the original mobile? Explain your thinking in each case.
    - i.  $3T + S = T + 2S$
    - ii.  $3TS = 2TS$
    - iii.  $T + T + T + S = T + S + S$



### Activity 2 [Page 2.4]

1. Generate a new mobile.
  - a. Write down an equation for your mobile.
  
  
  
  
  
  
  
  
  
  
  - b. Assign a weight to one of the shapes. Can you find the weight of the other shapes in your mobile? Write down the solution if you can.



# Visualizing Equations Using Mobiles

## Student Activity

Name \_\_\_\_\_

Class \_\_\_\_\_

- c. Generate a new mobile. Repeat steps a and b. Do this until you have at least two mobiles for which you can find the weight of the other shape(s).
  
  - d. Exchange your equations for your two mobiles with a partner. Then go to page 2.4 and build the mobiles. Find the missing weight(s). Check with your partner to see if your answers agree.
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2. Go to page 2.5. Work with a partner to create a mobile that models each situation using *at least* one triangle, one circle and one square. Assign weights to give the desired outcome. Be sure you check your work using your mobile.
    - a. Determine weights for the square and circle that makes the triangle have to have a weight of 16.
  
    - b. Assign weights to the triangle and the circle so that no whole number weight for the square will make your mobile balance.
  
    - c. Assign weights to the square and to the triangle so than any weight for the circle will make the mobile balance.
  
    - d. Assign weights to the square and the triangle so that the only weight for the circle is 0.



3. Suppose you have a balanced mobile. Decide which move will always keep the mobile balanced. Explain your reasoning in each case.
  - a. removing the same shape from both arms
  - b. removing the same number of shapes from each arm, regardless of what type they are
  - c. adding an additional shape to both arms
  - d. interchanging the shapes on the two arms
  - e. doubling the numbers of shapes of each kind on each arm
  - f. adding the same shape to both arms



### Activity 3 [Page 2.5]

1. Al and Bert lived in a large urban area and had to use some kind of transportation to get to their workplace.
  - a. Bert found that it took the same amount of time for two shuttles on the weekend as for the total time it took to make the trip by train five times. If the shuttle trip takes 70 minutes, how much time would it take Bert to make the commute by train?
  - b. One week they both worked seven days and spent the same total amount of time commuting. Al went by car every day, and Bert took the train five days and the shuttle the other two (the train did not work on the weekend). How long did it take Al to make the trip by car?