Graphical Solutions to Systems of Equations

For **each problem**, complete the following steps **in order**:

1. **Define the variables**
   - Clearly state what x represents and what y represents in the context of the problem.
2. **Explain the equations**
   - Briefly describe what each equation represents in words.
3. **Write the equations**
   - Create **two equations** that correctly model the scenario.
4. **Graph the system**
   - Enter both equations into **Desmos**.
   - Sketch the graphs and **clearly label the point(s) of intersection**.
5. **Verify.**
   - Confirm that your graphical solution matches your equations.

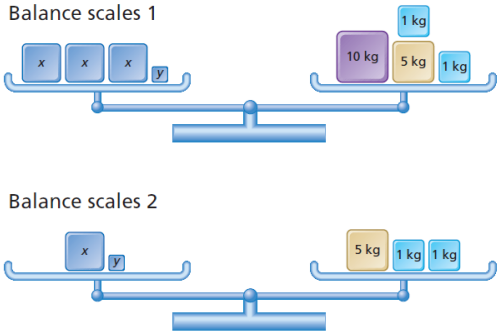
SALES PROBLEMS

1. At a dance recital, there were 220 people. Tickets cost $9 for an adult and $6 for a child. The dance school collected $1614 in ticket sales. How many adults and how many children attended the recital?

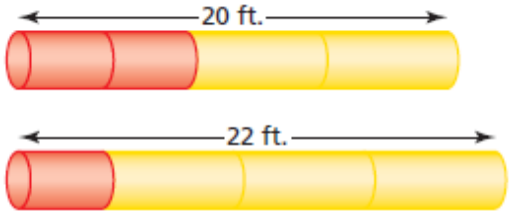
2. The admission fee for the chuckwagon races at the Grande Prairie Stompede is $10 for children and $16 for adults. On a certain day, 2200 people enter the fair and $30 544 is collected. Determine the number of children and the number of adults that attended on this day.

PICTURE PROBLEMS

3.



4.



VALUE PROBLEMS

5. An exam worth 125 points contains 40 questions. Some of the questions are worth two points and some are worth five points. Determine the number of two-point questions and the number of five-point questions.

6. A farmer has 500 ha of land. She earns approximately $220 for each hectare of crops and the $60 for every hectare of woodland. She would like a minimum revenue of $90 800 that year. Determine the number of hectares that she needs to convert to woodland and how many hectares of cropland should the farmer have?

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COIN PROBLEMS

1. Andrea has a bag of coins. There are 32 coins altogether, consisting of quarters and dimes. The total value of the coins is $5.90. Determine the number of quarters and the number of dimes in the bag

2. In Calgary, a school raised $195 by collecting 3000 items for recycling. The school received 5 cents for each pop can and 20 cents for each large plastic bottle.

NUMERACY PROBLEMS

3. Two numbers have a sum of 15. Their difference is 35.

4. Two complementary angles (angles that add up to 90º) have a difference of 26 degrees. Find the measures of the angles.

PERIMETER PROBLEMS

5. The perimeter of a rectangular parking lot is 90 m. The length is 5 m longer than the width.

6. When 30 identical rectangular tables are placed end to end, their perimeter is 306 ft. When the same tables are placed side by side, their perimeter is 190 ft. What is the width and length of each table?