



Problem of the Month



The Wheel Shop

Level A:

You go to a shop that sells tricycles. There are 18 wheels in the Wheel Shop.



How many tricycles are in the shop?

Explain how you know.

Level B:

The Wheel Shop sells other kinds of vehicles. There are bicycles and go-carts in a different room of the shop. Each bicycle has only one seat and each go-cart has only one seat. There are a total of 21 seats and 54 wheels in that room.



How many are bicycles and how many are go-carts?

Explain how you figured it out.

Level C:

Three months later some vehicles have sold and new models have been brought into the Wheel Shop. Now, there are a different number of bicycles, tandem bicycles, and tricycles in the shop. There are a total of 135 seats, 118 front handlebars (that steer the bike), and 269 wheels.



How many bicycles, tandem bicycles and tricycles are there in the Wheel Shop?

Level D:

In the back stockroom at the Wheel Shop, the number of seats and horns equaled the number of wheels. The number seats and handlebars equaled the number of horns. Twice the number of wheels is equal to three times number of handlebars. Determine the relationship of horns to seats.

Level E:

The repair department of the bicycle shop repairs three things: flat tires, bent handle bars and ripped seats. Today in the repair department, 25% of the bikes had flat tires only, 5% had bent handlebars only, and 10% had ripped seats only. Just $\frac{1}{12}$ th of the bikes had all three repairs to do: flat tires, bent handlebars and ripped seats. No bikes were completely fixed and there are a total of 101 repairs to be made. How many bikes are in the repair department? How many bikes need two repairs? If less than half of all the bikes have a ripped seat, what is the range of bikes that need both the tires and handlebars repaired without needing to fix the seat?



Problem of the Month

The Wheel Shop



Primary Version Level A

Materials: A tricycle and/or a picture of a tricycle for each student. Counters or round chips (20 per group).

Discussion on the rug: (Teacher shows the tricycle) “What do we call this? How many wheels does a tricycle have? Who can show me how they know there are three wheels? Who else can show me? What if I have two tricycles, how many wheels would I have?” (Teacher continues to ask children to explain how many wheels and how they know for sure. You might continue to three before you go to small groups.)

In small groups: (Each group has approx. 20 round counters to model as wheels.)

(Teacher asks the following questions. Only go on to the next question if student have success.)

1. Show me with counters how many wheels you would have with three tricycles. How can you check to know for sure?

(Continue until you think students understand a process. If 10 is too large, use a different number.)

2. If you had 10 tricycles, how many wheels would you have? How do you know?

(At the end of the investigation have students either draw a picture to represent their solution or dictate a response to this summary question.)

Tricycle

