

Tailspin

You need

- ★ group data sheet (see copymaster)
- ★ a tape measure or a metre stick
- ★ a calculator
- ★ grid paper
- ★ a 2 cm-wide counter
- ★ chalk
- ★ groups of classmates

TECHNOLOGY

People use models to see whether a new technological idea works properly. For example, a bicycle maker may make a model of a new type of brake and test it on an existing bike.

Activity One

Maryanne's school is preparing for their musical production, "The Pied Piper of Hamelin". Everyone in her class is going to be a rat, so they need to make rat costumes.

1. A real rat's tail is almost as long as its body and drags on the ground. However, if the costume tails are too long, the "rats" will trip over them on stage.

In groups:

- a. measure and record the floor-to-hip height for each person in the group
- b. use rope or some other suitable material to model a tail and record the length that each person decides is best for them.



I'm short, so I need a short tail or I'll trip over it.



Well, I'm tall, and I don't want a short tail.

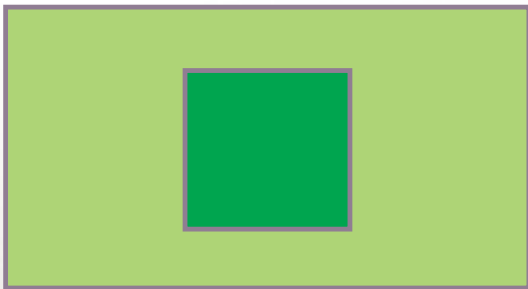


With a classmate:

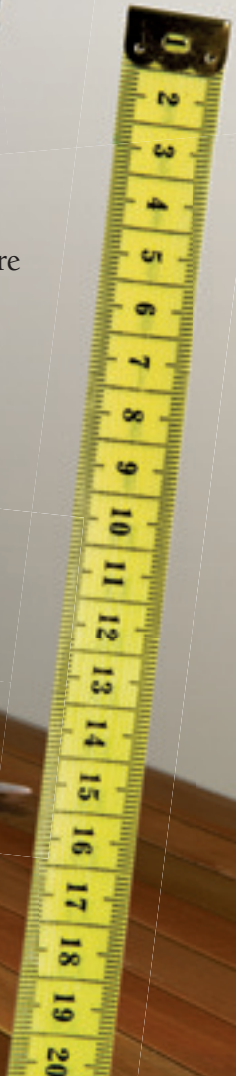
2. a. Combine your data with that of other groups. Graph the combined data.
b. What does your graph tell you? (You may have made more than one graph.)
3. a. If you had to choose a one-size-fits-all tail, what would be the best length?
b. Which of your classmates would this size definitely not suit and why?

Activity Two

The stage at Maryanne's school is approximately 13 metres (m) wide and 7 m deep. The main characters will occupy a 4 m by 4 m square in the middle.



1. Using grid paper, draw the stage to scale.
2. In scenes 1 and 3, rats enter the stage from the wings and line up in 1 row, facing the audience, on both sides of the main characters' space. Estimate how many rats can be on the stage.
3. In scene 2, some rats dance around the Pied Piper inside the middle square.
 - a. Investigate the amount of space a rat spinning in a circle will need. Use a generous length of 1 m for their tail.
 - b. How many spinning rats could fit inside the middle square without tripping on each other's tails?
 - c. Add the dancing rats to your diagram. (Show each rat's circle by tracing around a counter.)



Focus

Exploring the distribution of a single variable