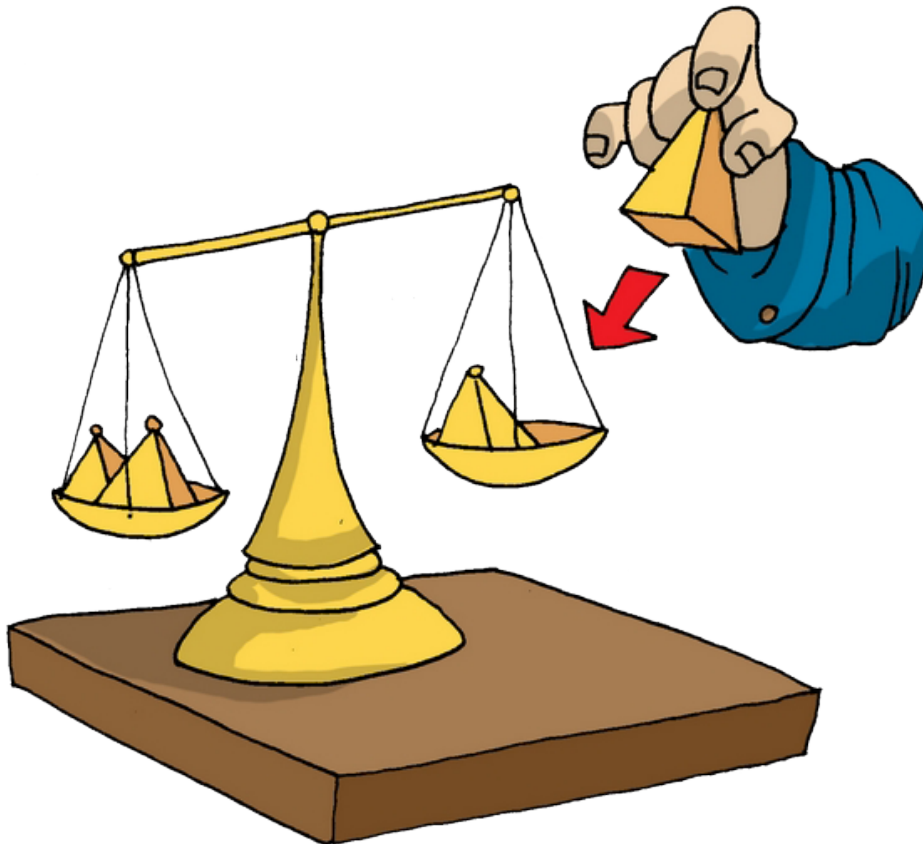


Weight

Academic Content Standards

- Determine which are heavy or light from among several objects and be aware that scales are required for precise measurement of the weight of objects.
- Understand the principles of measuring the weight of objects using balances.
- Understand the principles of measuring objects using spring scales.
- Understand that according to its purpose, different kinds of scales are used in everyday life.



Name: _____

Student Number: _____

Homeroom: _____



Can you guess which is heavier?



Look at and hold the things you have been given. Can you put the things in order from lightest to heaviest?

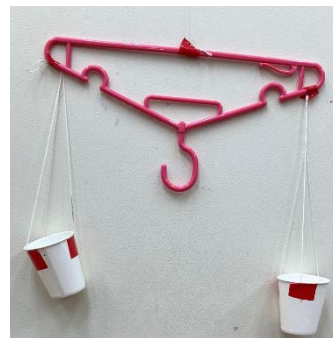
Lightest

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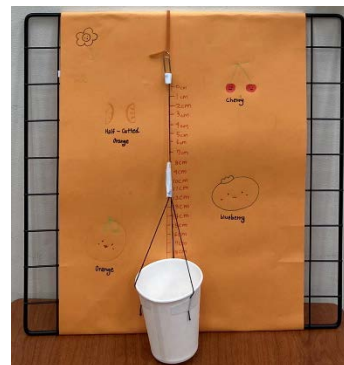
Heaviest



Use the materials shown to make a balance scale and a spring scale. Use both of these scales to help you put the items in order from lightest to heaviest. Some designs are shown to help you with your ideas.



Balance Scales



Spring Scales



Lightest

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Heaviest



Share Your Results.

Discuss your ideas and findings with your classmates. Were there any interesting observations?



When you jump, why don't you fly off into space? The reason is because there is an invisible force that pulls you down to the ground. This force is called gravity. Weight is a measure of how much the Earth is pulling you down. We usually say this is how heavy something is.

It can be difficult to know how heavy something is unless you weigh it. In this activity, you made a balance scale that compared the weight of your objects. The heavier side went down. You also made spring scales. The elastic or spring stretched more for heavier objects.

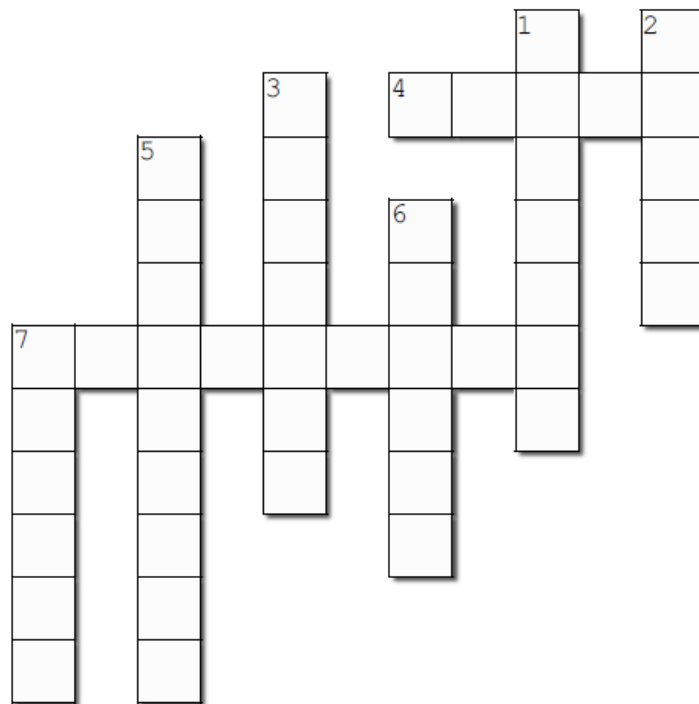


balance scales



spring scales

Use the information above to help you complete the crossword.



Across

- 4. Gravity is a _____.
- 7. Bonus: You were being a ___ today.

Down

- 1. The force that pulls you down to the ground.
- 2. You need to weigh something to find out how ___ it is.
- 3. These scales can compare how heavy different things are.
- 5. This means you can't see it.
- 6. This is the measure of how much the Earth pulls things down.
- 7. These scales stretch.



How did you know if an object was heavier than another object?



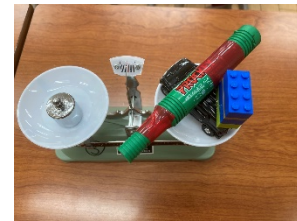
What weighs exactly 100 grams? How can you check?



Find things around you that you think would weigh exactly 100 grams. It could be one thing, or it could be the weight of two or more things combined. Write or draw your idea below. How can you check to see if you are correct?



1. You now have three more attempts to find things that weigh exactly 100 grams. Use balance scales or dial scales to help you weigh your objects.
2. Write or draw what things you chose in the chart below.
3. Use digital scales to accurately weigh your objects. Write this weight in the chart below.



balance scales



dial scales



	Attempt 1	Attempt 2	Attempt 3
Things Chosen			
Actual Weight			



Share Your Results.

Discuss your ideas and findings with your classmates. Were there any interesting observations?



You can probably work out what things are lighter or heavier just by holding them, but sometimes you need to have accurate weights when making or doing things. For example, if you look at cooking recipes, you usually need to put in the right amount of each ingredient, or the food you are making will taste disgusting. It is also important that a doctor gives you the right amount of medicine. Too much medicine might cause some serious problems.

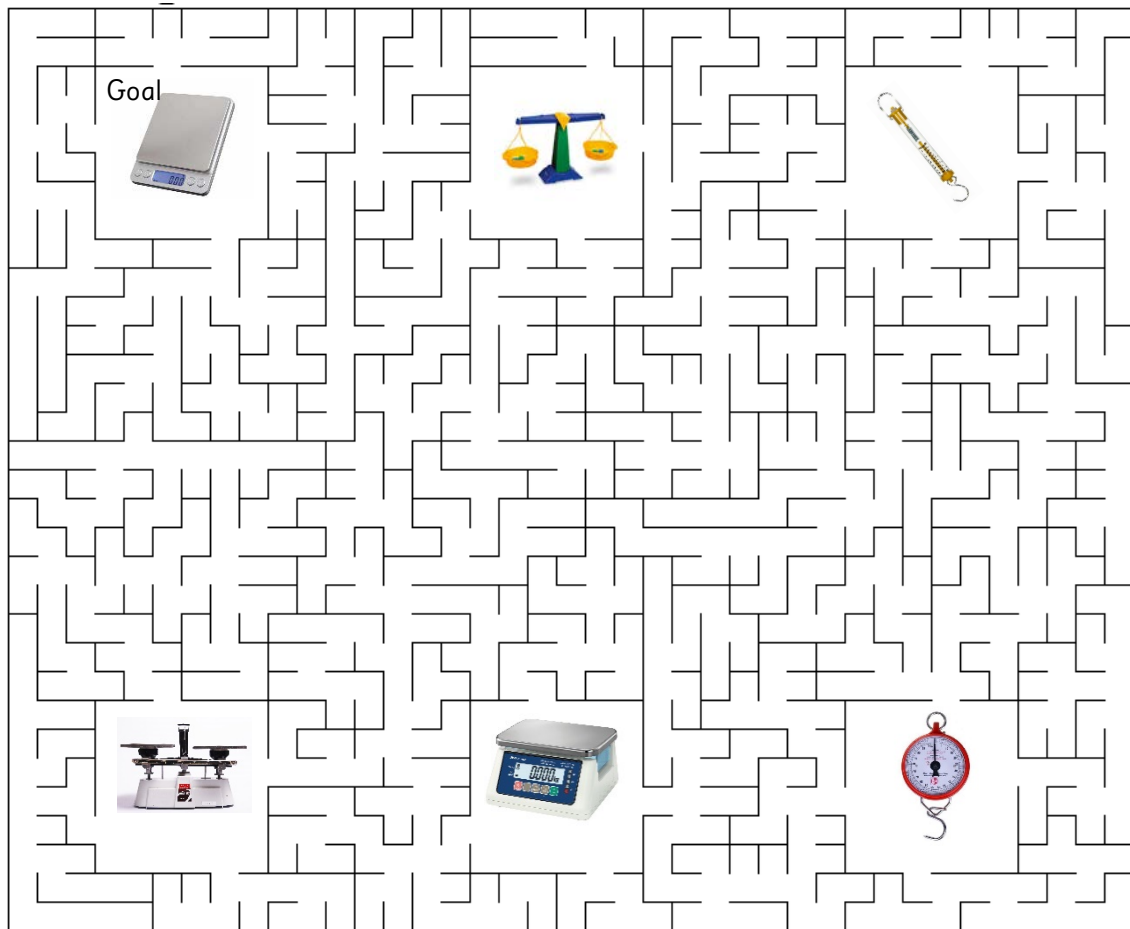


Digital scales are very useful and are often used to measure small items. You probably have them at your home. You can weigh things that are only 0.01 grams on many digital scales, which is quite accurate.



digital scales

As you complete the maze, write if the picture is of a balance scale, spring scale, or digital scale.



Start

Goal

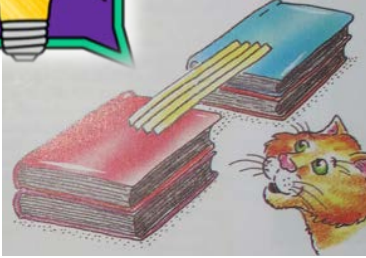


How can you accurately weigh objects?

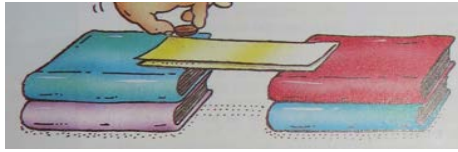


How can you make a paper bridge that can hold the most weight?

Circle the bridge design that you think will be strongest.



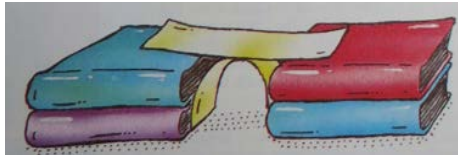
The accordion bridge



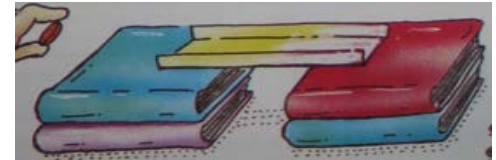
The one-fold bridge



The flat bridge



The arched bridge



The walled bridge

The Challenge!



1. The bridge can be made from only 1 sheet of copy paper. You can use less paper, but not more.
2. You may not use glue, tape, or any other materials.
3. You may bend, fold, or cut the paper any way you like.
4. The two stacks of books must be at least 10cm high and placed 18cm apart.
5. Add coins or flat marbles, one at a time, on the bridge.
6. Choose your best bridge for the challenge.
7. Weigh your coins/marbles using a balance scale, spring scale, and finally a digital scale.



Draw and/or explain some bridge designs you tried. Circle your best bridge.

	Attempt 1	Attempt 2	Attempt 3
Weight (grams)			



Share Your Results.

Discuss your ideas and findings with your classmates. Were there any interesting observations?

Main Ideas – Review Questions



After completing this unit, you should be able to answer these questions. Write your answers in complete sentences.

1) What is weight?

2) What are three examples of scales that can measure weight?

3) How do spring scales work?

4) What scales can accurately weigh things?

5) When is it important to weigh things accurately?

6) BONUS: We did a paper bridge challenge. Can you come up with a “tissue” challenge that compares the strength of two or more different tissues?
