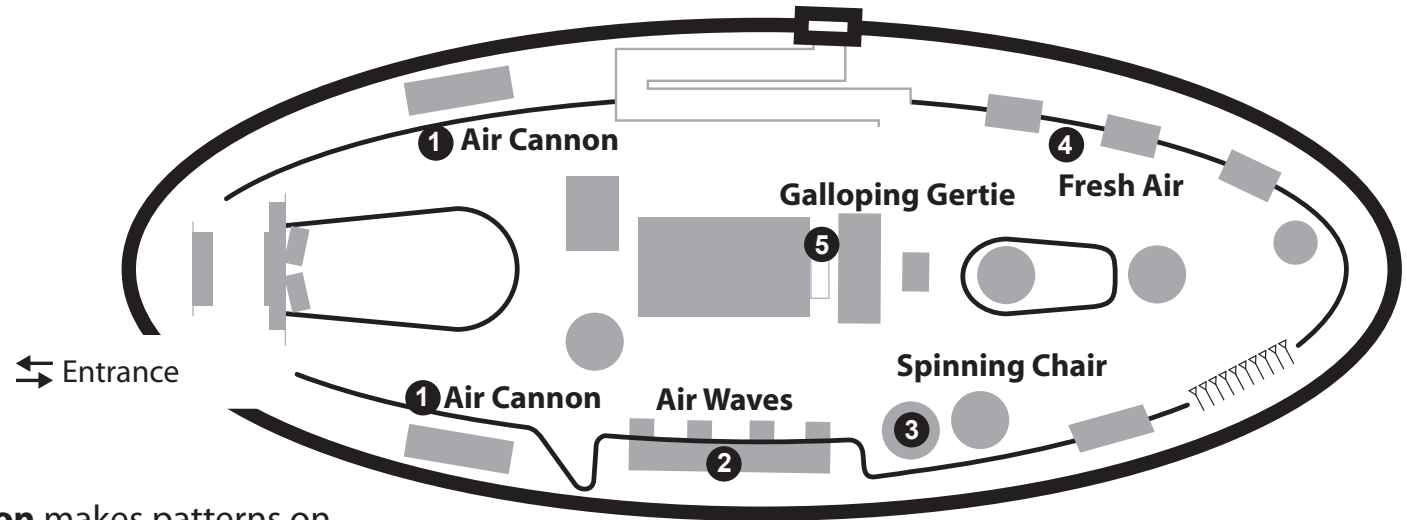


Air Pavilion Quiz

Name: _____ Class: _____



1 Pushing and pulling the **Air Cannon** makes patterns on the leaf wall. What do they look like?

2 **Air Waves** - which key produces the highest pitch note?

Green **Yellow** **Red** **Blue**

Why do you think this is?

3 When you pull your legs in on the **Spinning Chair**, do you...?

speed up (accelerate) or **slow down (decelerate)**

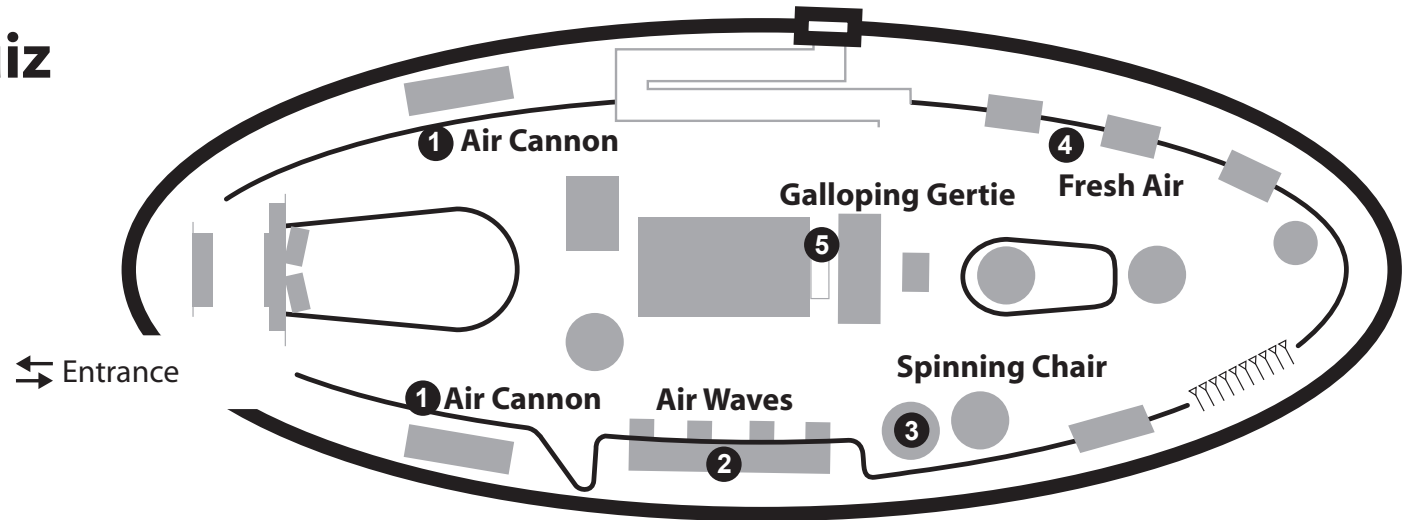
4 Air is mostly a mix of which two gases?

_____ and _____

Name one other gas found in the air?

5 The Tacoma Narrows Bridge was nicknamed **Galloping Gertie**. Why do you think it collapsed?

Air Pavilion Quiz Answers



- 1 Pushing and pulling the **Air Cannon** makes patterns on the leaf wall. What do they look like?

Ripples on a pond

- 2 **Air Waves** - which key produces the highest pitch note?

Green **Yellow** Red Blue

Why do you think this is?

More water in the bottle, so shorter air column.

- 3 When you pull your legs in on the **Spinning Chair**, do you ...?

speed up (accelerate) or **slow down (decelerate)**

- 4 Air is mostly a mix of which two gases?

Nitrogen and **Oxygen**

Name one other gas found in the air?

Carbon dioxide or any of the trace gases e.g. hydrogen, helium, neon, argon, krypton, carbon monoxide etc.

- 5 The Tacoma Narrows Bridge was nicknamed **Galloping Gertie**. Why do you think it collapsed?

The wind pushed and pulled the bridge, making the bridge vibrate. These vibrations were so strong that the bridge shook itself apart.

Science calls this condition **resonance**. The frequency of vibration caused by the air matched the natural frequency of the bridge. Every material has a natural frequency, so engineers have to be careful to design structures to limit the effects of resonance.

Earth Pavilion Quiz

Name: _____ Class: _____

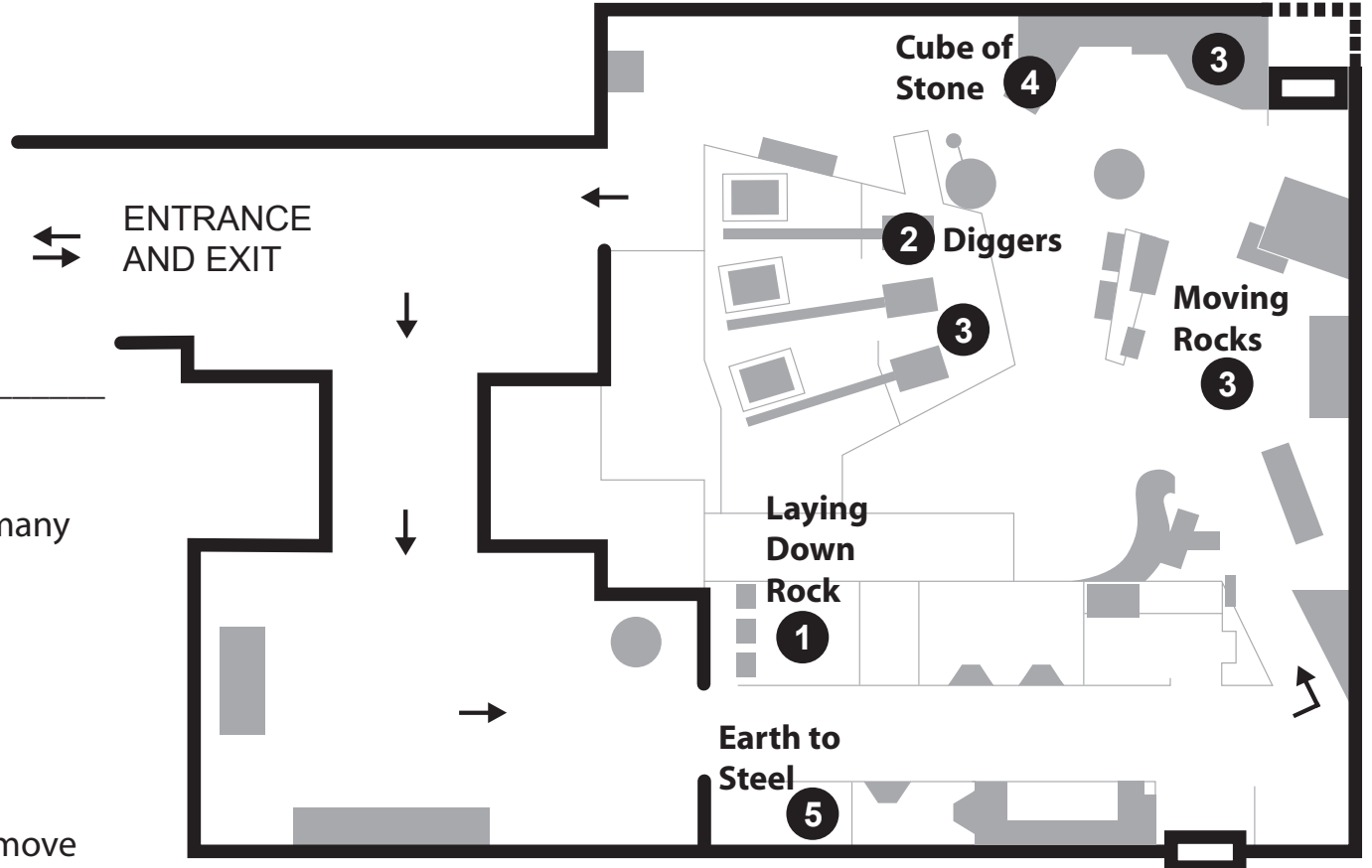
1 Laying Down Rock.
Which three materials are taken from the Earth to make steel?

2 Diggers require large forces to move the many tonnes of rock around, how do they do it?

H _____

3 Moving Rocks.
How many different machines are used to move rocks around in the Earth Pavilion?

4 Cube of Stone.
Name the 3 forces in action when you lift the cube of stone.



5 Earth To Steel.
By the year 1700 Sheffield had already developed a large iron industry. Which 4 local resources had made it successful?

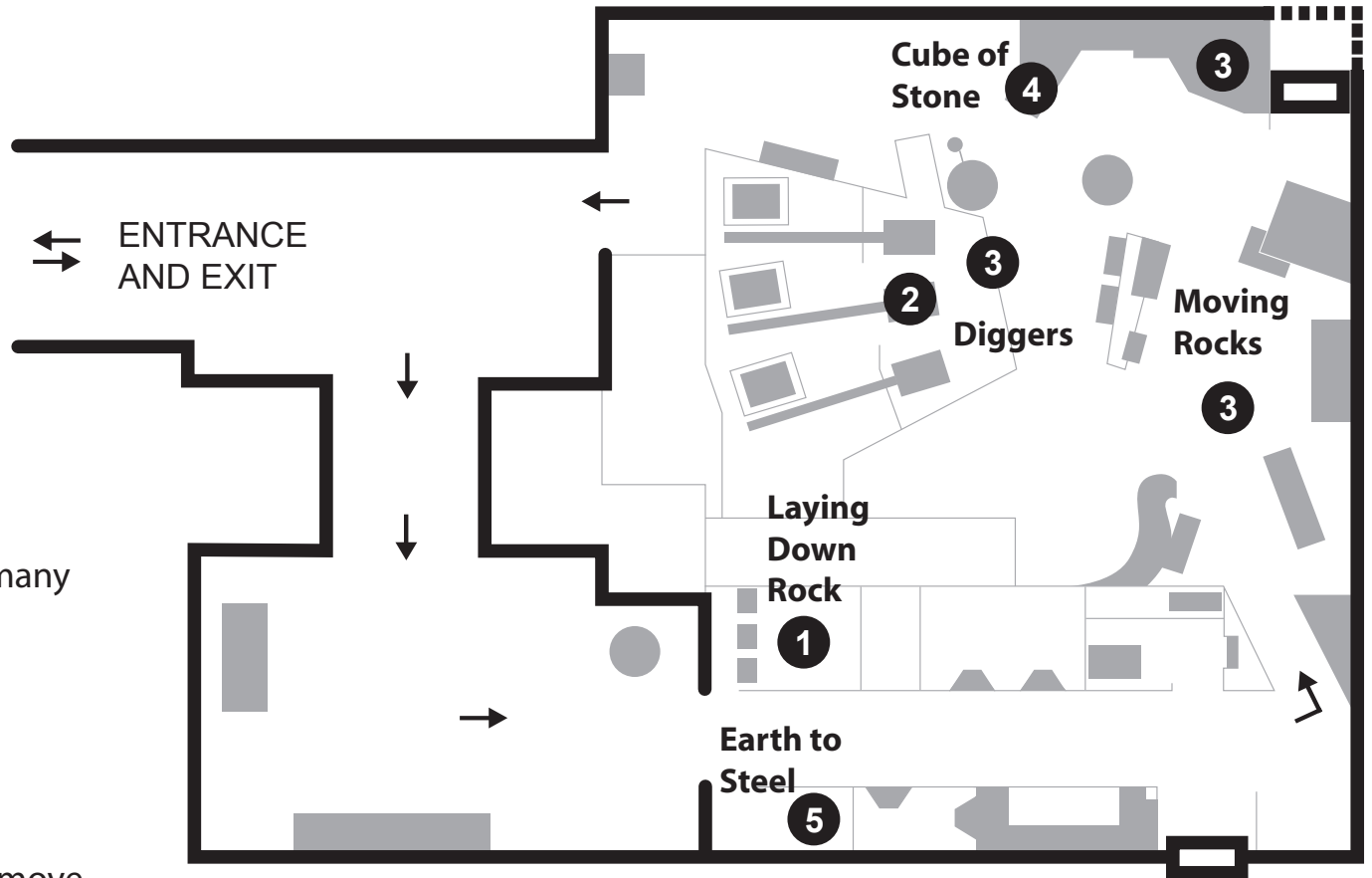
Earth Pavilion Quiz Answers

- 1 **Laying Down Rock.**
Which three materials are taken from the Earth to make steel?
Iron Ore Coal Limestone

- 2 **Diggers** require large forces to move the many tonnes of rock around, how do they do it?
Hydraulics

- 3 **Moving Rocks.**
How many different machines are used to move rocks around in the Earth Pavilion?
4, these are diggers, bucket lifts, conveyor belts, and wheelbarrows (5 if you included the excavator wheel)

- 4 **Cube of Stone.**
Name the three forces in action when you lift the cube of stone.
Pull (chain Tension) Weight (Gravity) Friction



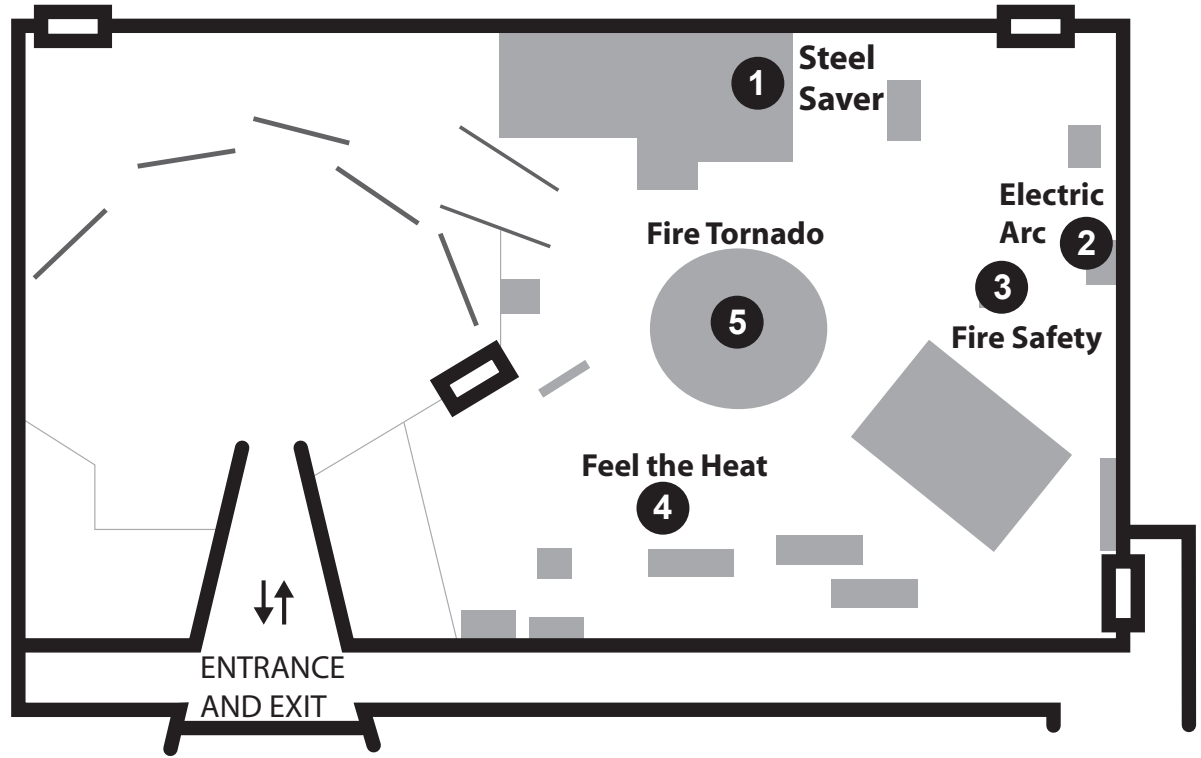
- 5 **Earth To Steel.**
By the year 1700 Sheffield had already developed a large iron industry. Which 4 local resources made it successful?

Supplies of **iron ore, charcoal** (later **coke**), **water power**, and **skilled workers**.

Fire Pavilion Quiz

Name: _____ Class: _____

- The **Steel Saver** crane is an electromagnet. Which of these metals would it pick up?
copper iron aluminium
- The **Electric Arc** melts steel. At what temperature does it melt?
21°C 100°C 1500°C
- Fire Safety** assesses fire risk in the home. Where would be the best places to put a smoke detector in your home?



- Feel the Heat** explores heat flow. How did the plate in the middle feel?
warm cold both
 Try and explain your answer.

- The **Fire Tornado** is an irreversible change. Watch what happens and then number the sentences in the right order to describe the fire tornado.

- | | |
|---------------------------------------------------------------------------|-----------------------------------------------------------------------|
| <input type="checkbox"/> Fans make the air rotate. | <input type="checkbox"/> The fuel runs out and the tornado dies away. |
| <input type="checkbox"/> The fire tornado spirals upwards. | <input type="checkbox"/> The fuel is ignited. |
| <input type="checkbox"/> Convection causes a small flame to start rising. | <input type="checkbox"/> Kerosene fuel is heated. |

Fire Pavilion Quiz

Answers

1 The **Steel Saver** crane is an electromagnet. Which of these metals would it pick up?

copper **iron** aluminium

2 The **Electric Arc** melts steel. At what temperature does it melt?

21°C 100°C **1500°C**

3 **Fire Safety** assesses fire risk in the home. Where would be the best places to put smoke detectors in your home?

Bedrooms Landings Hallways

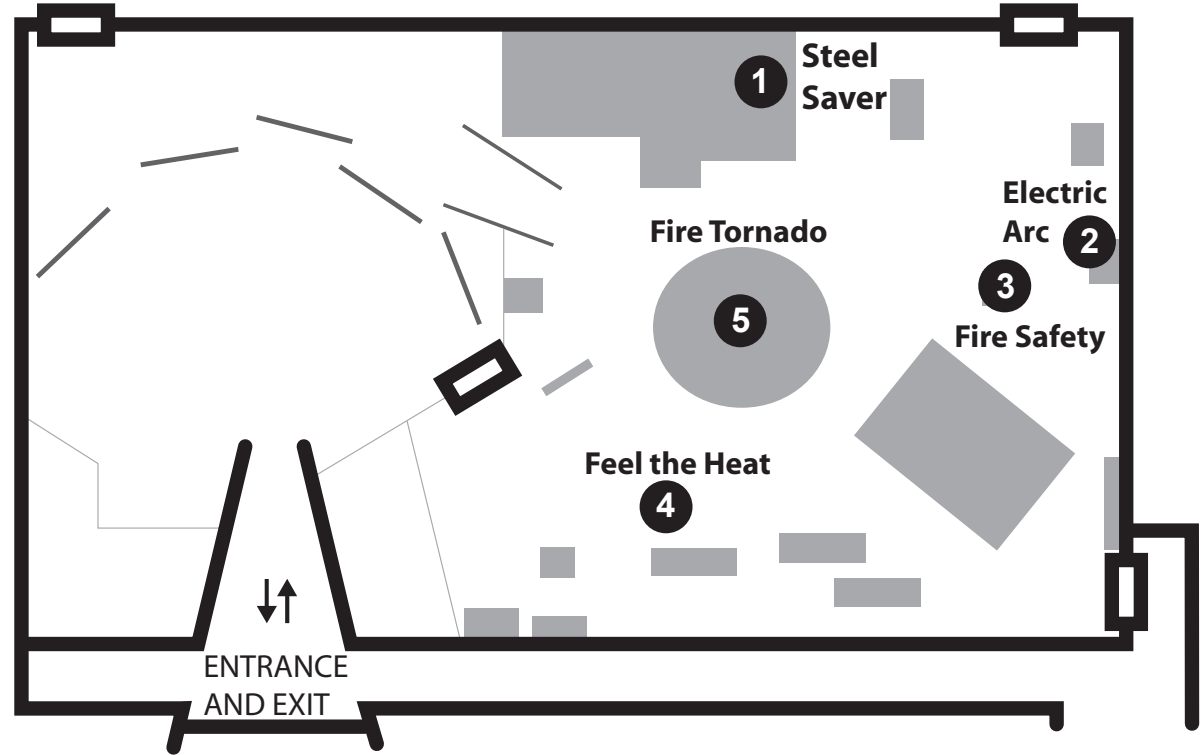
4 **Feel the Heat** explores heat flow.

How did the plate in the middle feel?

warm cold **both**

Your right hand is cold and your left hand is warm. The middle plate has a temperature in between.

Heat goes into your right hand and out of your left hand. Heat always flows from warmer to cooler places. Your body senses this heat flow.



5 The **Fire Tornado** is an irreversible change. Watch what happens and then number the sentences in the right order to describe the fire tornado.

4 Fans make the air rotate.

6 The fuel runs out and the tornado dies away.

5 The fire tornado spirals upwards.

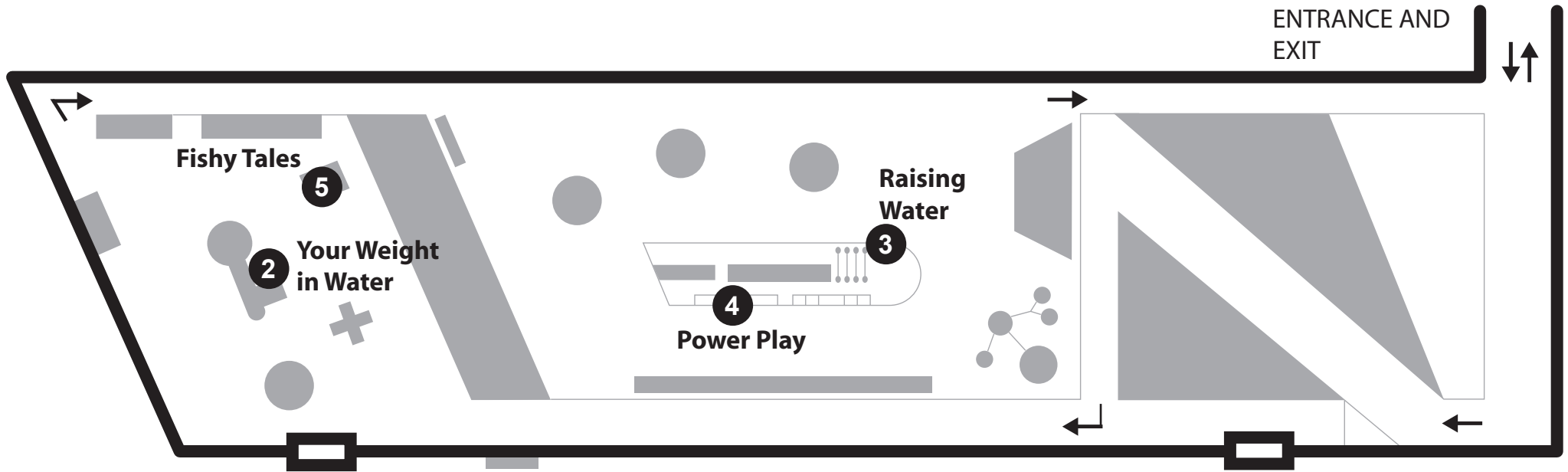
2 The fuel is ignited.

3 Convection causes a small flame to start rising.

1 Kerosene fuel is heated.

Water Pavilion Quiz

Name: _____ Class: _____



1 Where in the Water Pavilion can you find **ice, water** and **steam**? Mark your answers on the map with a cross.

2 **Your Weight in Water.** How many litres of water does your body contain, and where would you find most of it?

3 **Raising Water.** Which colour machine is the most efficient?

4 **Power Play** is made of 3 different water wheels. Which wheel turns with the largest force?

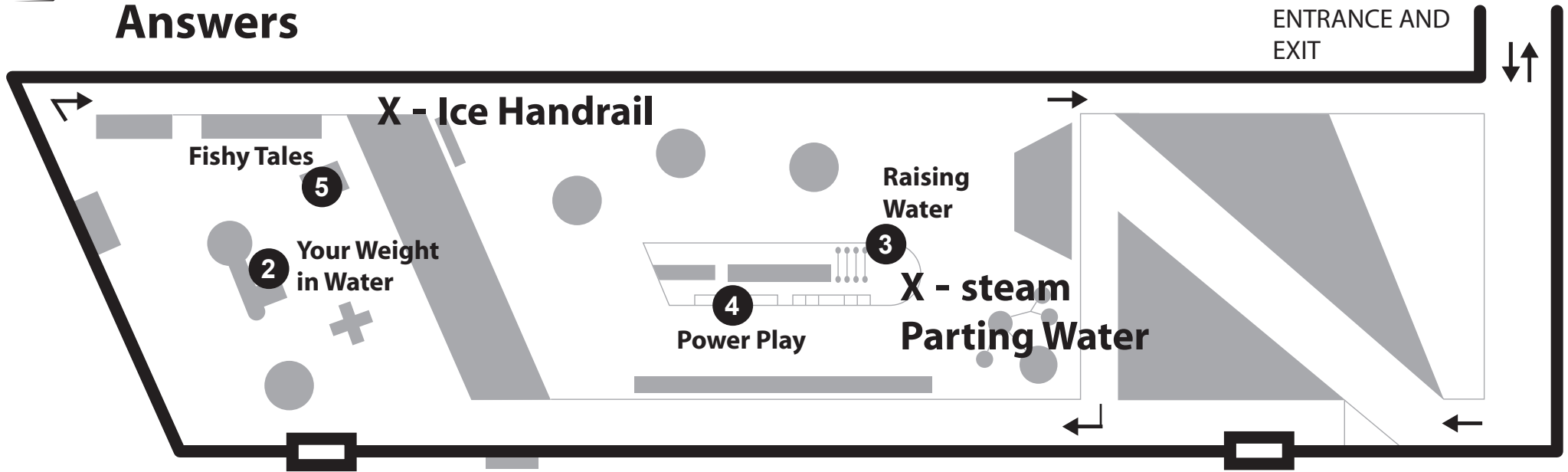
undershot overshot breastshot

Try and explain why this is...

5 **Fishy Tales.** During which period in history were the local rivers most polluted?

Water Pavilion Quiz

Answers



1 Where in the Water Pavilion can you find **ice, water** and **steam**? See plan for ice and steam, and there is water all over the place! (OK so the 'steam' is really condensed water vapour).

2 **Your Weight in Water.** How many litres of water does your body contain, and where would you find most of it? Answer varies with body weight, but about **2/3rds** is water. Found in all body fluids e.g. blood, and in the cells of all tissues. Water is essential for all body processes.

3 **Raising Water.** Which colour machine is the most efficient?
Blue

4 **Power Play** is made of 3 different water wheels. Which wheel turns with the largest force?

undershot **overshot** breastshot

Try and explain why this is...

Overshot wheels generate their power from the **push** of the water flow **and** the **weight** of the water.

5 **Fishy Tales.** During which period in history were the local rivers most polluted?
About **1800 to 1980**, corresponding to the peak period in the steel industry.