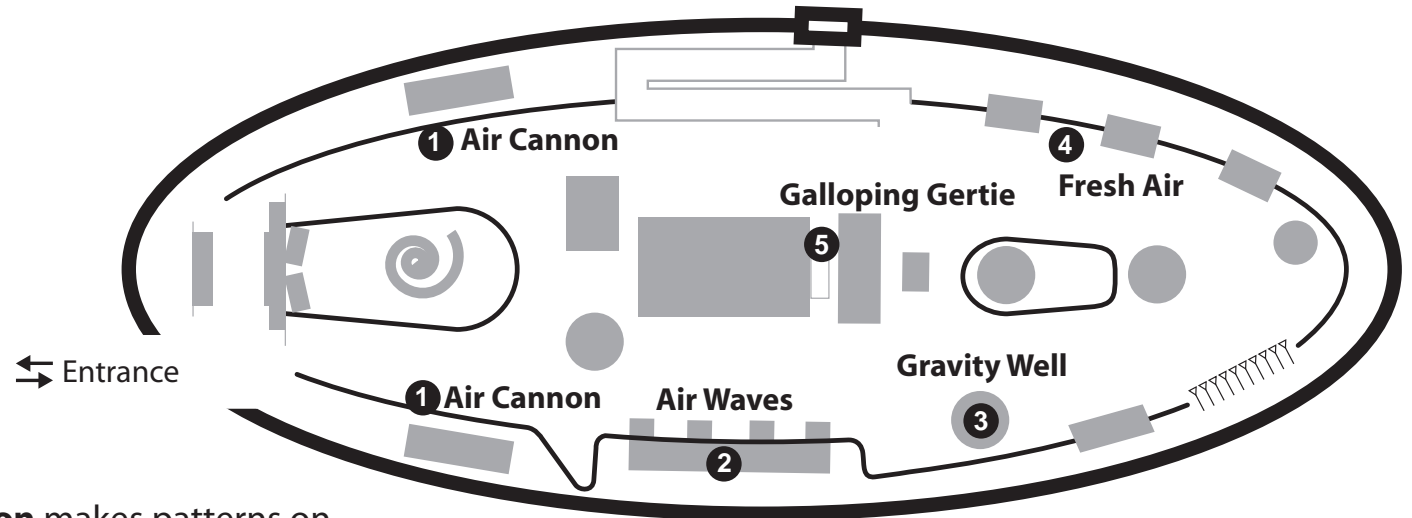


# Air Pavilion Quiz

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 **Gravity Well** - as the balls rotate and fall to the bottom of the well do they...?

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

Which energy transfer is taking place?

**Heat to kinetic energy**

**Gravitational to kinetic energy**

**Kinetic to electrical energy**

4 Air is mostly a mix of which two gases?

\_\_\_\_\_ and \_\_\_\_\_

Name one other gas found in the air?

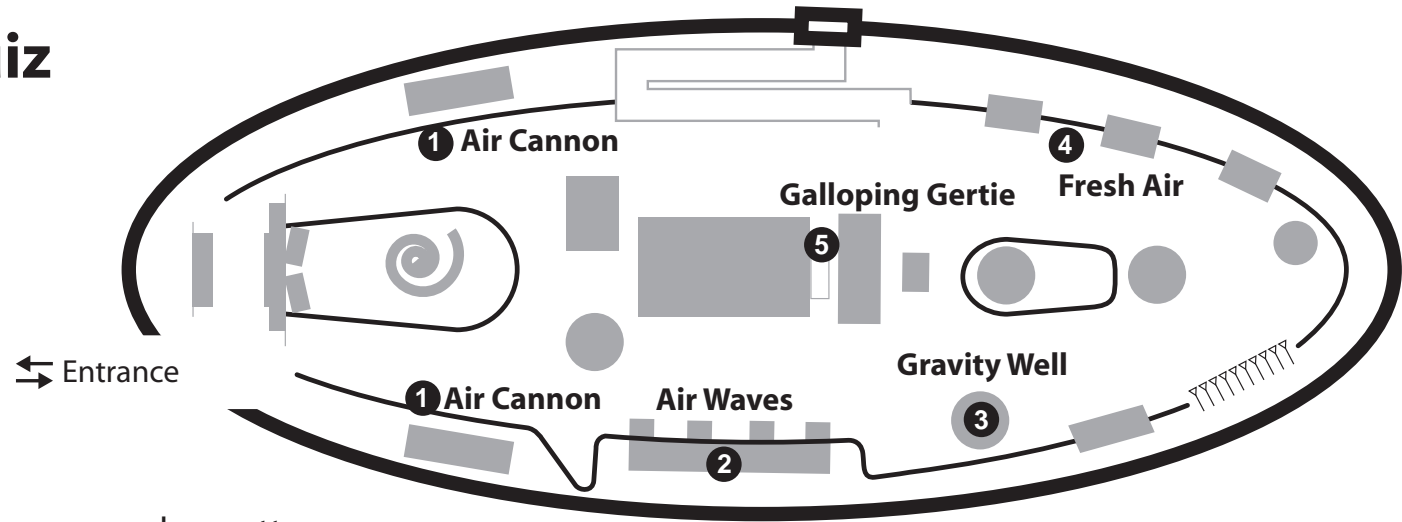
\_\_\_\_\_

5 **Galloping Gertie** shows the story of the Tacoma Narrows Bridge. Why do you think the bridge fell down? Cross the box for the description you think is true.

**The wind pushed and pulled the bridge. This made the bridge vibrate. This vibration was so strong that the bridge broke apart.**

**The people and cars on the bridge made it shake and then it fell down.**

# **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** **Gravity Well** - as the balls rotate and fall to the bottom of the well do they...?

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

Which energy transfer is taking place?

Heat to kinetic energy

**Gravitational to kinetic energy**

Kinetic to electrical energy

**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 etc.**

**5** **Galloping Gertie** shows the story of the Tacoma Narrows Bridge. Why do you think the bridge fell down? Cross the box for the description you think is true.

**The wind pushed and pulled the bridge. This made the bridge vibrate. This vibration was so strong that the bridge broke apart.**

**The people and cars on the bridge made it shake and then it fell down.**

Science calls this condition **resonance**. The frequency of vibration caused by the air matched the natural frequency of the bridge. Every structure has a natural frequency, so engineers have to design to limit the effect 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 \_\_\_\_\_

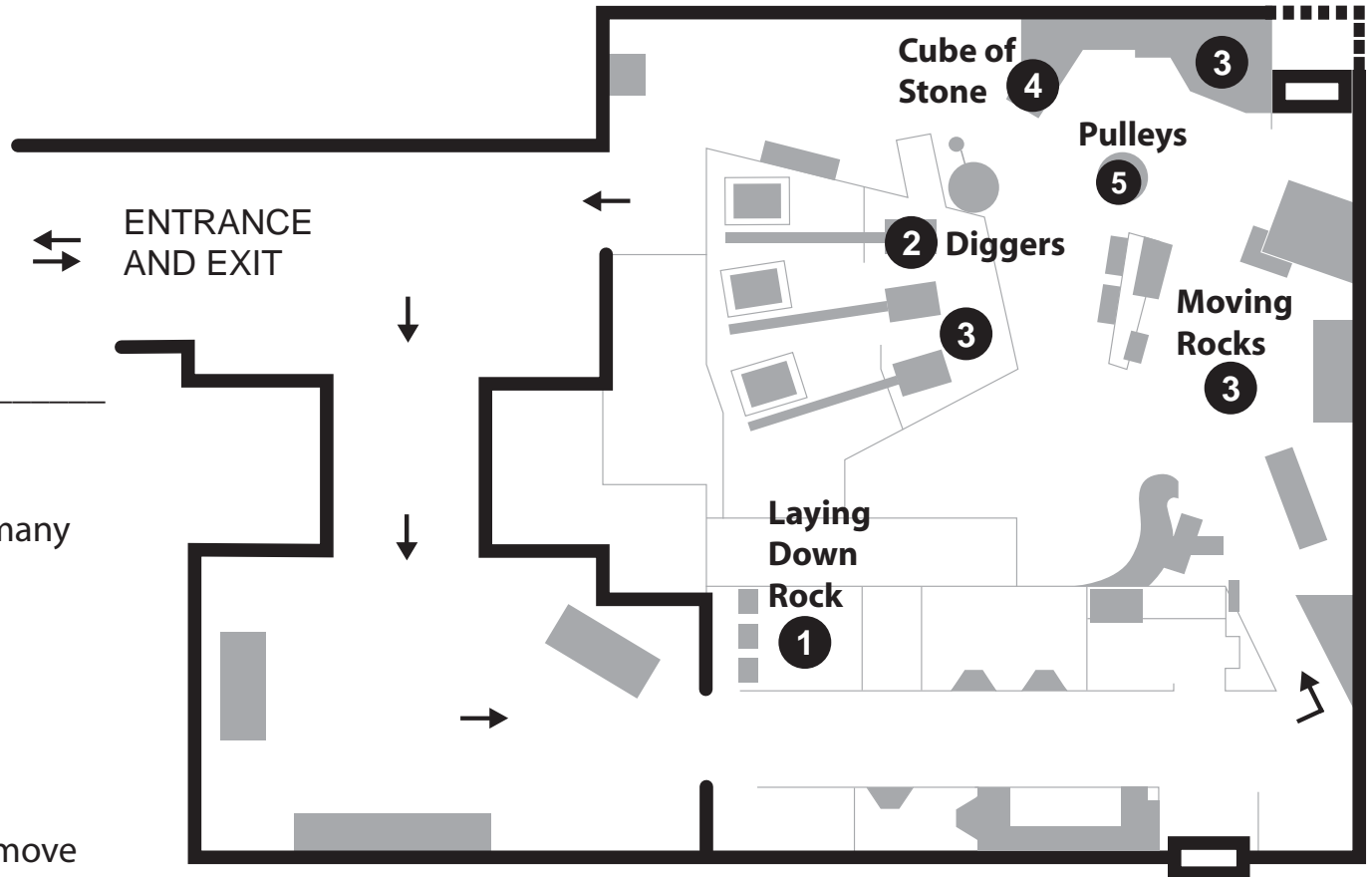
**3 Moving Rocks.**  
How many different machines are used to move rocks around in the Earth Pavilion?

\_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_



**5 Pulley Buckets.**  
Which bucket is easiest to lift? Pulleys give you a mechanical advantage.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

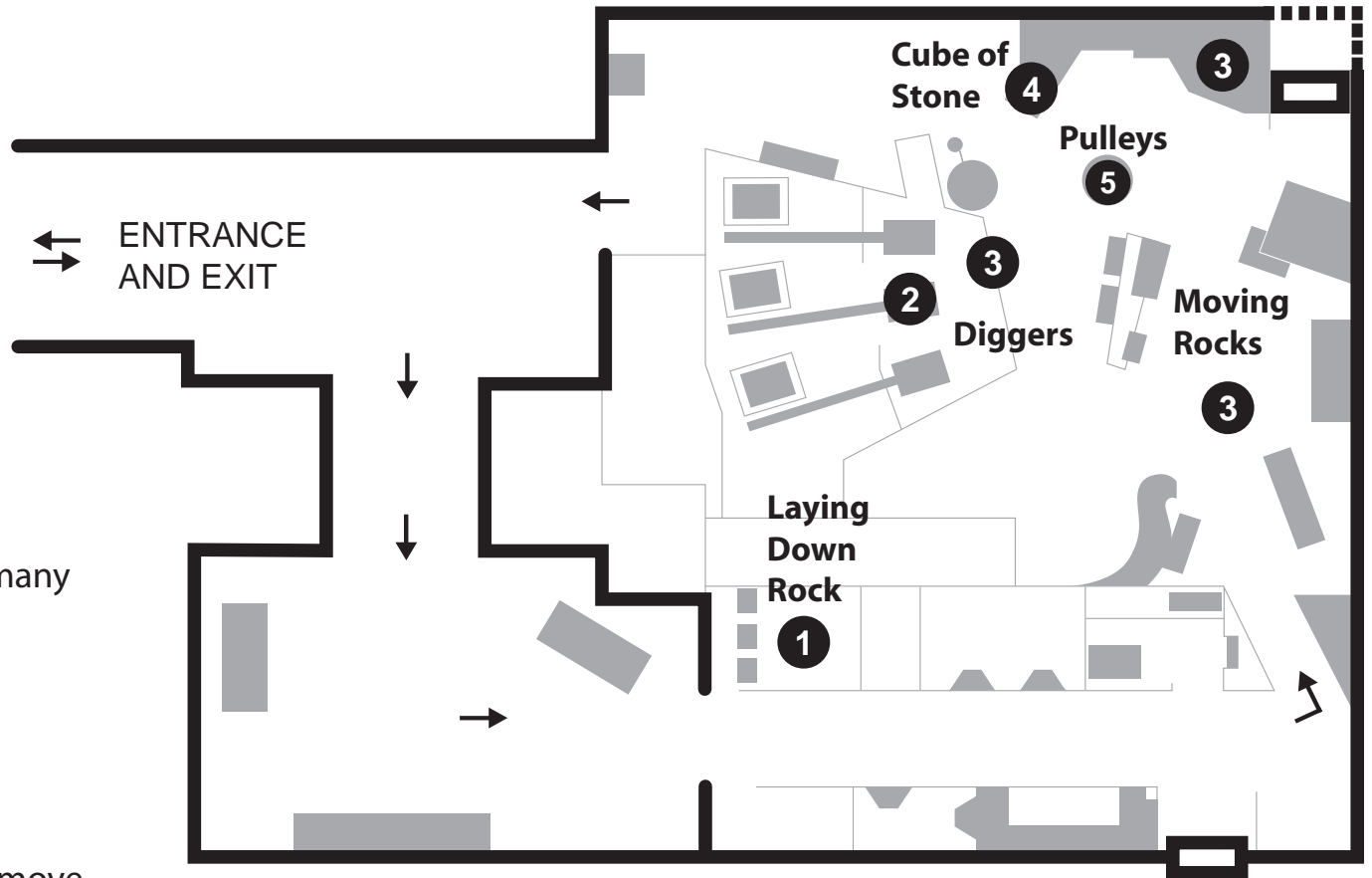
# Earth Pavilion Quiz Answers

**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**



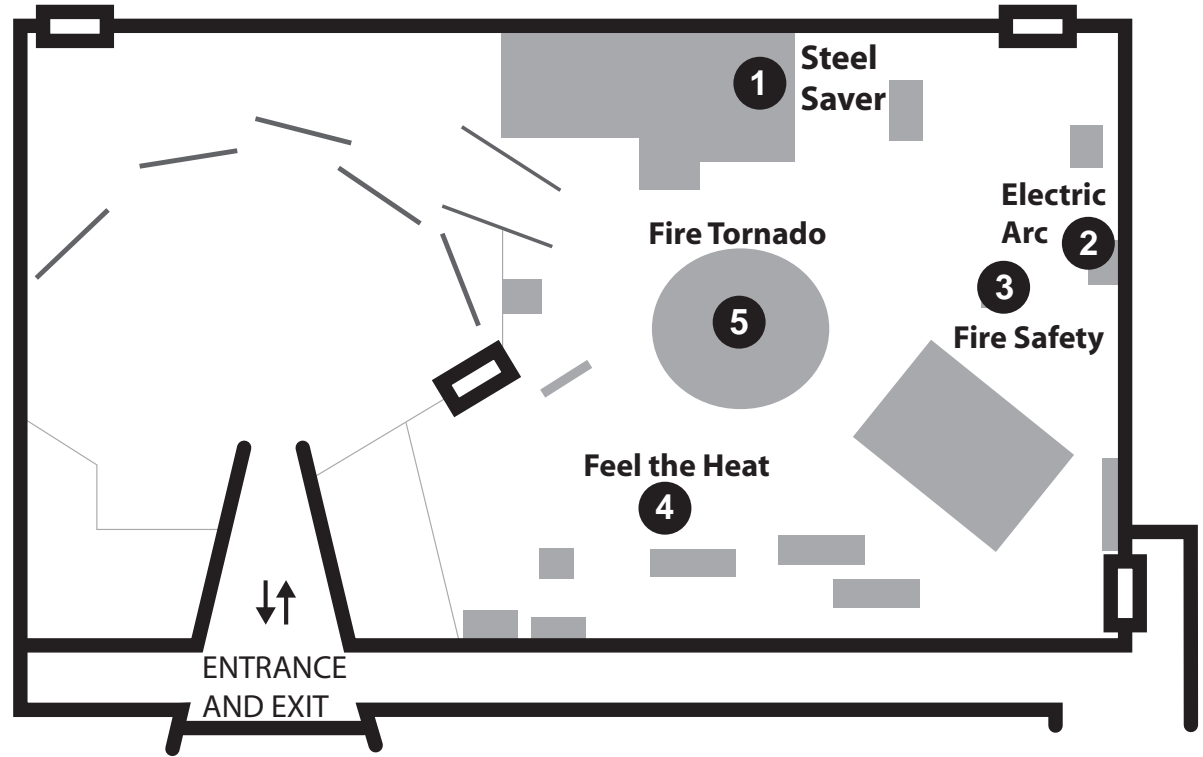
**5 Pulley Buckets**  
Which bucket is the easiest to lift?

The one with the most **pulleys**, this is the one nearest to the wall

# 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 a spectacular example of combustion. It burns kerosene (also called paraffin), which is used to fuel jet aircraft. Match the fuels below to where they are often used, one has already been done:

petrol	camping stove
natural gas	power station
coal	car
LPG	cooker

*(A diagonal line is drawn from the 'camping stove' to 'LPG')*

# 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? Any of:

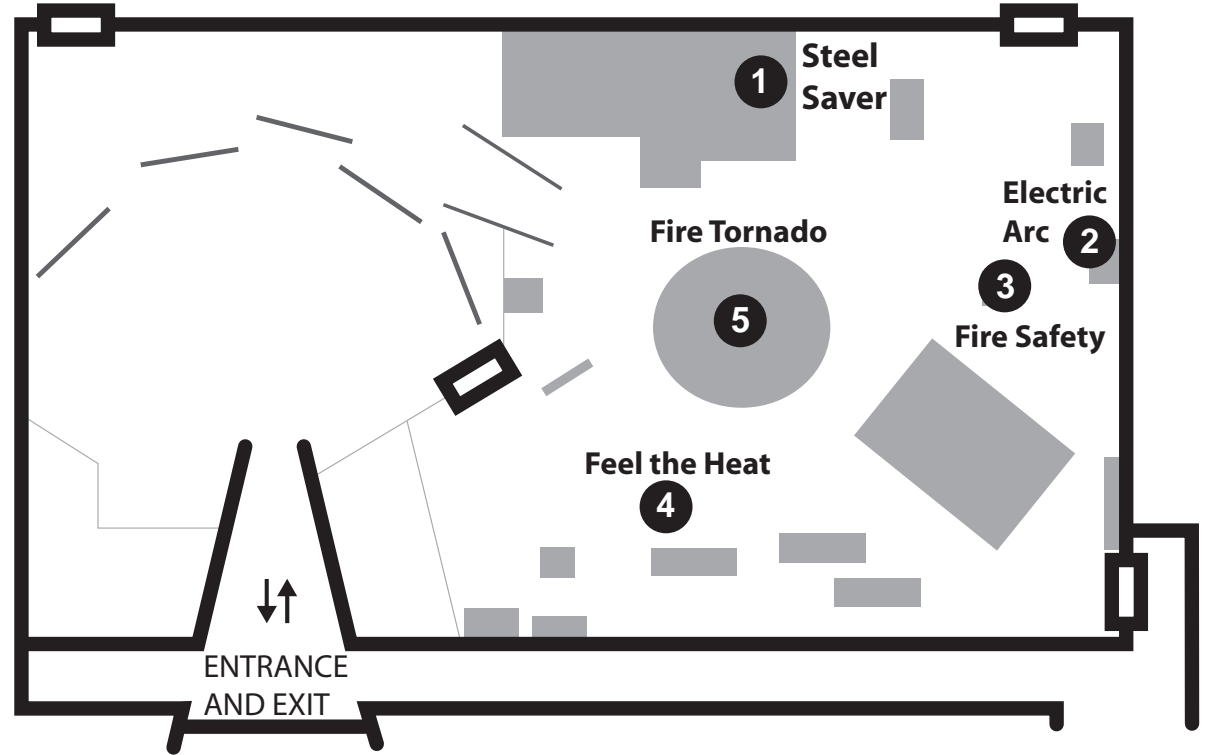
**Bedrooms**    **Landings**    **Hallways**

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.

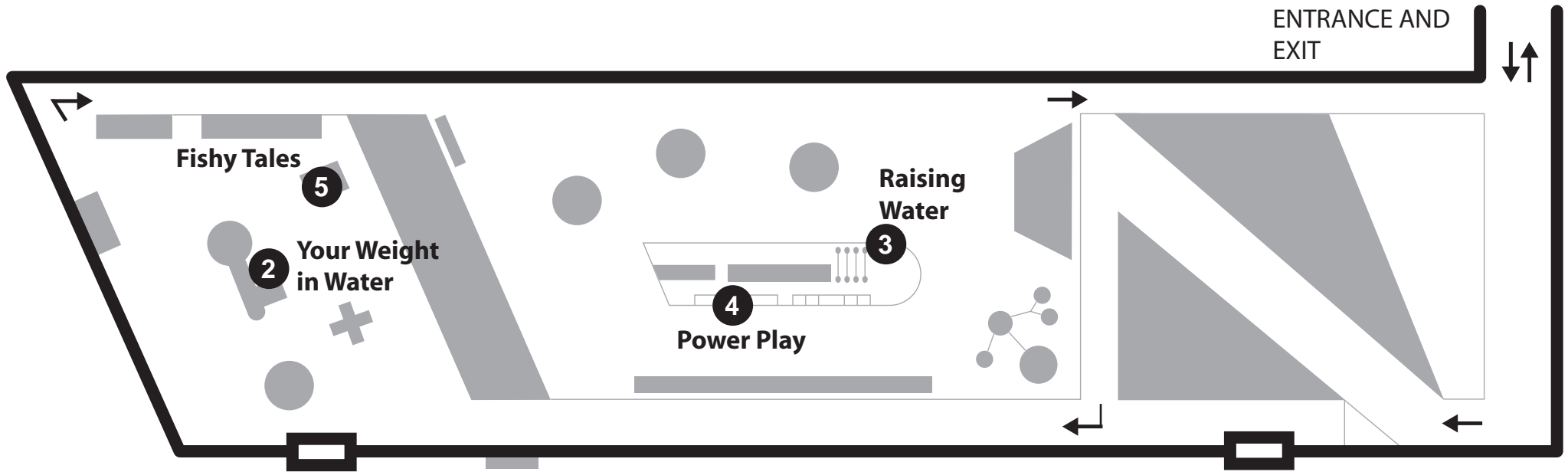


5 The **Fire Tornado** is a spectacular example of combustion. It burns kerosene (also called paraffin), which is used to fuel jet aircraft. Match the fuels below to where they are often used, one has already been done:

petrol	<del>camping stove</del>
natural gas	<del>power station</del>
coal	<del>car</del>
LPG	<del>cooker</del>

# 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?

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

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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...

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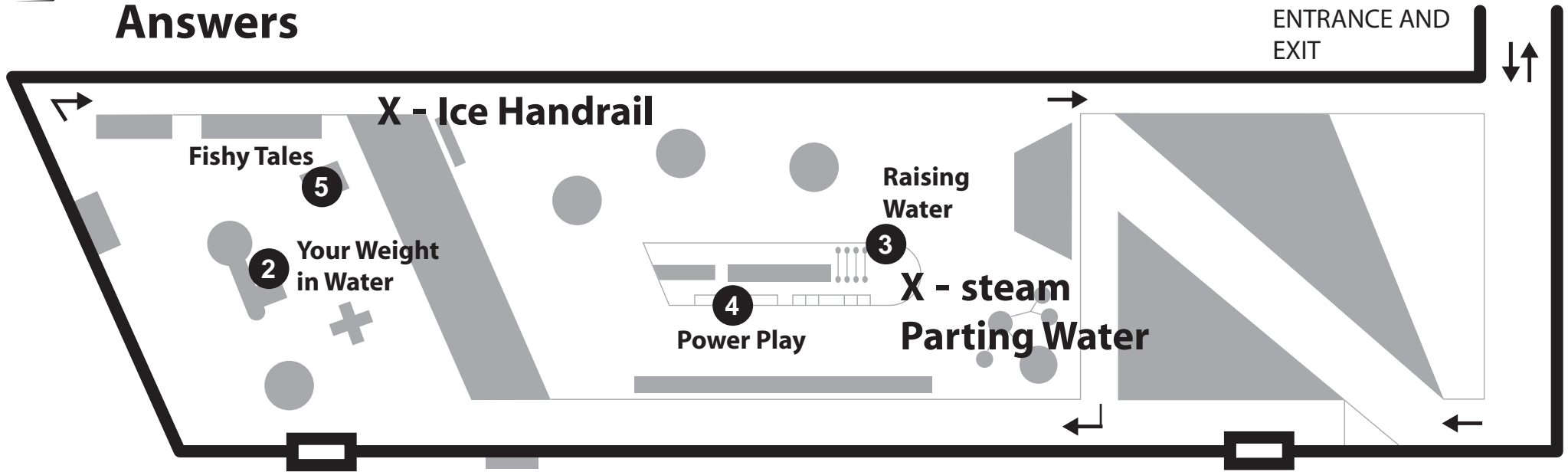
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5 **Fishy Tales.** During which period in history were the local rivers most polluted?

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# 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.