Grade 6 - Warrior Extended Learning Packet

Science

Name_____ Date_____

Grade 6

Directions: Read the text below. Then match each statement with the number of the correct step in the scientific method.

The scientific method is a set of steps that scientists use in order to learn more about something. By following the scientific method, scientists can gather information, perform experiments, and discover new things about our world. The scientific method follows this general pattern:

1. **make observations about our world**
2. **identify a problem or question**
3. **research information about that problem or question**
4. **make an educated guess about the problem or question**
5. **design and perform an experiment**
6. **gather and study new information from the experiment**
7. **think about and draw conclusions from the new information**

_____ **Elissa hypothesizes that crickets make more noise on hot nights than on cool nights.**

_____ **Elissa counts the number of chirps made by two groups of crickets, one group in a cool cage and one group in a warm cage.**

_____ **Elissa goes to the library to read information in an encyclopedia about the habits of crickets.**

_____ **Elissa wonders what causes crickets to make more noise some nights than others.**

_____ **Elissa makes a chart of the number of chirps made by the crickets in the cool cage versus the number of chirps made by the crickets in a warm cage.**

_____ **Elissa concludes that crickets chirp more often on hot nights than on cool nights.**

_____ **Elissa notices that during the summer, crickets make a lot of noise some nights, and little noise other nights.**



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Directions: Read the text below. Use information from the text to help you answer questions 1–2.

Cheng has difficulty sleeping during the summer because her pillow gets too hot and becomes uncomfortable. She decides to conduct an experiment to determine which type of pillow will stay the coolest.

1. **Cheng has already identified a problem, so now she needs to research the problem. How can she find out what types of pillows are being made?**

_____

_____

_____

2. **Cheng finds out that there are four main types of pillows: wool, cotton, foam, and feather. Now she needs to form a hypothesis. Which type of pillow do you think will stay the coolest and why?**

_____

_____

_____

Cheng then plans an experiment to test which type of pillow will stay the coolest. She places a small amount of wool, cotton, foam, and feathers underneath a heat lamp. Beneath each material, she places a thermometer. After 20 minutes, she records the temperature of each material.

Directions: Read each statement below. Place an "X" next to the sentence if it describes something Cheng SHOULD do in the experiment.

3. ____ **a. Use the same amount of material for each of the four pillow types.**

____ **b. Make the distance between the lamp and each material the same.**

____ **c. Use a different type of bulb for each material tested.**

____ **d. Stretch out the wool and cotton samples, and compress the foam and feather samples.**

Directions: Study the table below. Use it to help you answer question 4.

4. **Results:**

Pillow Type	Temperature
Cotton	23.8°C
Wool	26.6°C
Foam	25.9°C
Feather	25.1°C

Based on the results, which type of pillow should Cheng use to stay cooler?

_____



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Directions: Read the text below. Then fill in the table as directed.

When measuring different quantities of objects, scientists must record their data using the correct units so others can understand what their data means. Scientists have agreed to use SI units.

1. **Common SI units of measurement are listed in the Word Bank below. Write each measurement in the appropriate spot on the grid below.**

Word Bank

kilometers per hour	kilogram	meter	liter	degrees Celsius

Length	Mass	Volume	Temperature	Rate of Travel

Directions: Based on your knowledge of SI units, fill in the missing information with one of the following: mm, cm, m, km, g, kg, mL, or L. The units may be used more than once.

2. **A carton of milk can hold 1.8 _____ of milk, which is equivalent to 1800 _____ of milk.**
3. **A dollar bill is about 155 _____ long.**
4. **The distance from Earth to the moon is about 384,000 _____ .**
5. **A paper clip weighs 1 _____ .**
6. **When a polar bear stands on two feet, it may be as tall as 2.6 _____ .**
7. **When a human baby is born, it may weigh about 3000 _____, but when it grows into an adult, it can weigh 70 _____ .**
8. **A can of soda is about 12.3 _____ tall.**



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Directions: Read the questions. Choose the truest possible answer.

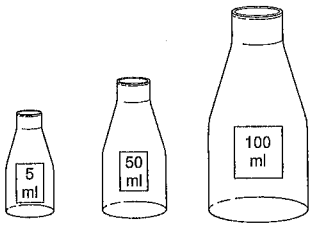
1. **It would make the most sense to use a microscope to look at which item?**
   - (A) a small spider
   - (B) the tip of your pencil
   - (C) a cheek cell
   - (D) a maple leaf

2. **What should you do if you are supposed to boil water, but your beaker has a crack on the bottom?**
   - (F) Boil the water as you would normally.
   - (G) Boil the water using a lower temperature.
   - (H) Tell your teacher that the beaker is cracked.
   - (J) Throw away the beaker in the nearest garbage can.

3. **Which of the following tools would be used to make an incision?**
   - (A) pins
   - (B) forceps
   - (C) a scalpel
   - (D) a dropper

4. **Theo has placed a thermometer in a flask of water that is heating on a burner. When the water begins to bubble and steam rises from the flask, the thermometer *most likely* reads _____.**
   - (F) 100° C
   - (G) 100° F
   - (H) 150° F
   - (J) 212° C

5. **Laurel is performing an experiment that involves combining 50 mL of water with 50 g of baking soda. After measuring 50 mL of water in a graduated cylinder, which of the containers below should Laurel use for mixing together the water and baking soda?**



   - (A) the 5 mL flask
   - (B) the 50 mL flask
   - (C) the 100 mL flask
   - (D) the 5 mL and 50 mL flasks

6. **A student places a small block of wood on the pan of a balance. He then places standard masses on the other pan. It takes 4 ten-gram masses, 1 five-gram mass, and 3 one-gram masses in order for the pans to balance out. What is the mass of the block of wood?**
   - (F) 8 g
   - (G) 12 g
   - (H) 48 g
   - (J) 413 g

GO ON

Name_____ Date_____

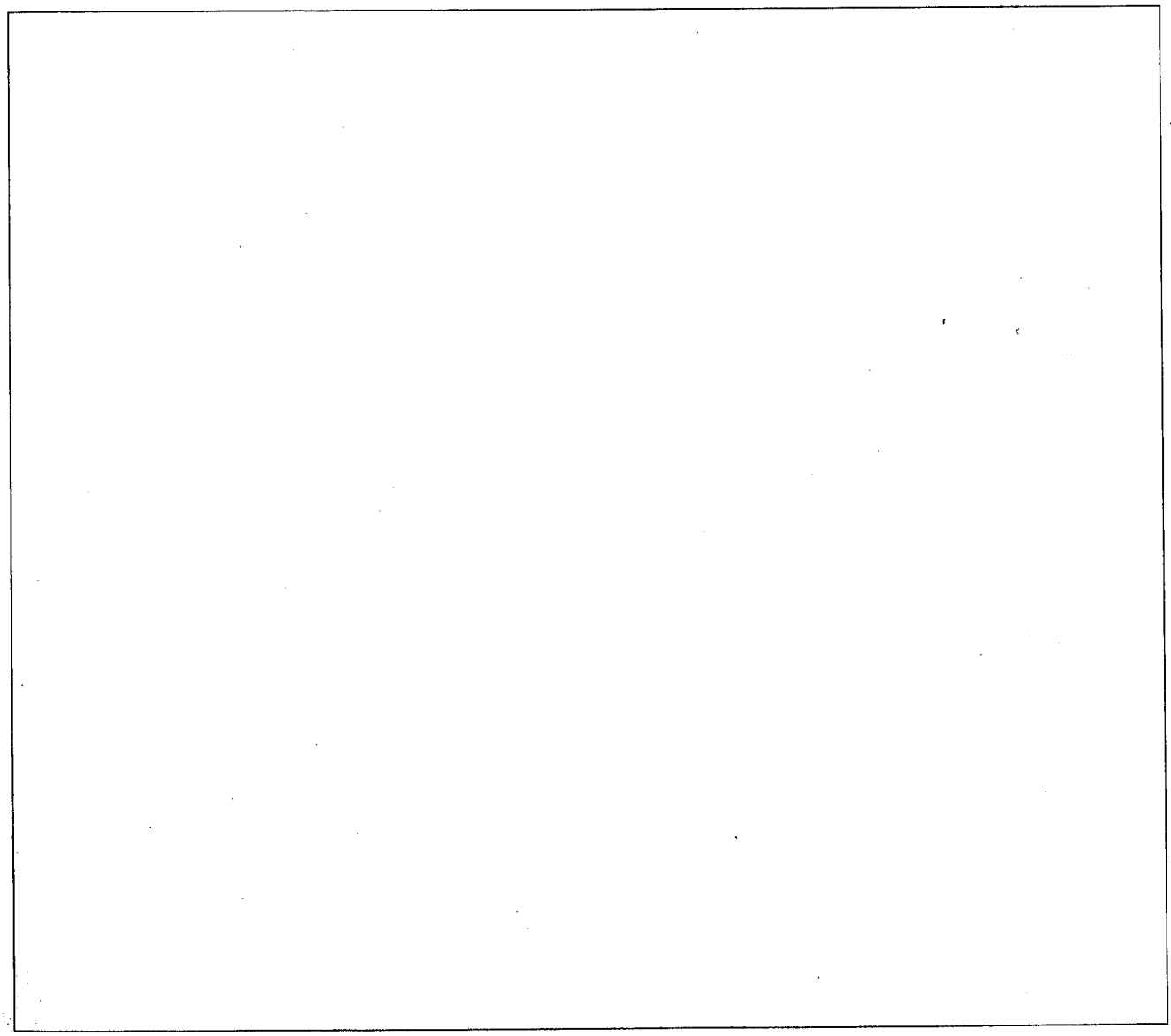
Grade 6

Directions: Read the text below and study the table. Then make a bar graph that clearly shows the information in the table. Include labels and a title for your graph.

Jenny wants to buy the brand of birdseed that will attract the most birds, so she sets up an experiment to see what kind of birdseed is best. In April, she hangs four birdfeeders in her yard, each with a different type of food.

The following table shows her results for the month of April:

Type of birdseed:	Happy Bird Seed	Yummy Seed	Birds Feast Birdseed	Farmer Joes Birdseed
Number of bird visits:	25	20	5	50



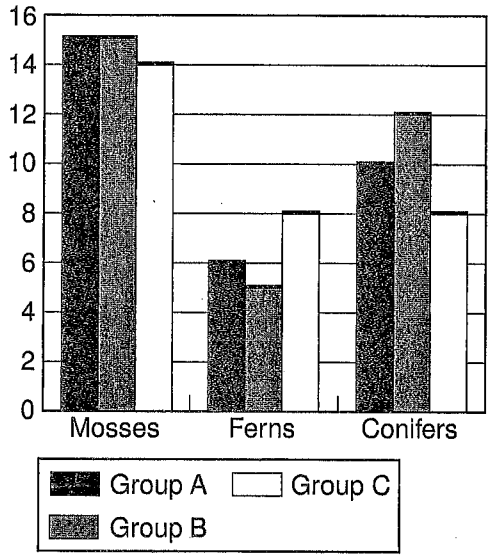


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Directions: Study the graph below. Use information from the graph to help you answer questions 1–6.

This graph shows the types of plants that a science class observed during a visit to the forest. The class was divided into groups and instructed to count a variety of plants.



1. **Which group is represented by solid black?** _____ .

2. **Which group found the most conifers?** _____ .

3. **How many mosses did Group B find?**
   - (A) 15
   - (B) 6
   - (C) 12
   - (D) 13

4. **Which group(s) found 10 conifers?**
   - (F) Group A
   - (G) Groups B and C
   - (H) Group C
   - (J) Groups A and C

5. **Which group found the most ferns?**
   _____ .

6. **What is the total number of plants found by Group B?**
   - (A) 15
   - (B) 16
   - (C) 19
   - (D) 32

STOP

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Directions: Read the questions. Choose the truest possible answer.

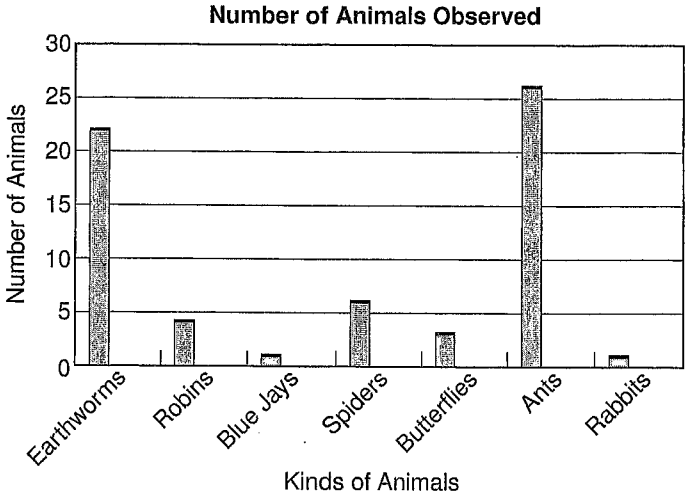
1. **Jess measured four seeds and found their lengths to be 4.2 mm, 3.7 mm, 5.3 mm, and 4.4 mm. What was the average length of the seeds?**

   (A) 4.3 mm
   (B) 4.4 mm
   (C) 4.9 mm
   (D) 5.0 mm

2. **Manuel wanted to estimate how much water he used when he took a shower. First, he measured the time of his shower. He found that he ran the water for 7 minutes and 10 seconds. Then he held a bucket under the shower to see how much water he collected in 30 seconds. Using a measuring cup, he counted 4.25 L of water in the bucket. About how many liters of water did Manuel use during his shower?**

   (F) 10 L
   (G) 30 L
   (H) 60 L
   (J) 200 L

The graph shows the number of animals a class observed when studying a plot of land near their school.



3. **What is the *best* estimation of the total number of animals the class observed?**

   (A) 45 animals
   (B) 55 animals
   (C) 60 animals
   (D) 65 animals

4. **What is the *best* estimation of the number of invertebrates, or animals without backbones, the class observed?**

   (F) 25 invertebrates
   (G) 45 invertebrates
   (H) 50 invertebrates
   (J) 55 invertebrates

GO ON

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Directions: Read the text below. Use information from the text to help you answer questions 1–4.

Maria's Experiment

My question: I want to find out my pulse rate before exercising. Then I want to see how it changes after one minute of strenuous exercise.

What I already know: I know that my pulse tells me the rate at which my heart pushes blood through my body. My blood carries oxygen and food to my cells. It carries carbon dioxide and waste away from my cells.

What I think will happen and why: The faster my heart beats, the more oxygen and carbon dioxide my blood can carry. And when I exercise, my cells need more oxygen and food. They make more waste and give off more carbon dioxide. I hypothesize that my pulse will increase by 50% after one minute of strenuous exercise.

What I did: First, I located my pulse on my neck, near the front. Then I made a drinking straw pulse measurer so I could see my pulse. I held a piece of clay over the place on my neck where I could feel my pulse. I pushed a straw into the clay so that it stuck straight out. Then I looked in a mirror and counted the number of times the straw moved in 15 seconds. I recorded this number in a chart and multiplied it by four to find my pulse rate—the number of times my heart beats each minute.

What I found out: My pulse rate without exercising was 95 beats per minute. After running in place for one minute, it was 120 beats per minute.

1. **What can Maria conclude?**

_____

2. **What can Maria do to be sure that her results are accurate and her conclusion is correct?**

_____

3. **Discuss one potential problem with this experiment.**

_____

4. **Maria decides that she wants to compare the pulse rate of people of different ages doing the same exercise over the same length of time. Describe in detail how she could best present the results of this extended experiment.**

_____

_____

GO ON

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Directions: Read the text below. Use information from the text to help you answer questions 1–3.

Water Filtration Investigation

Tiffany and Jody wanted to enter the science fair at school. "Let's do an experiment with soil," said Jody. "We could test different kinds of soil to see how fast water moves through each one."

Tiffany and Jody went to find soil samples in order to perform their experiment. They collected samples of sand, clay, soil from a garden, and silt from a streambed. Then they spread the four kinds of soil out on paper plates.

"Look how different they are," said Jody. "Maybe we should start by recording some observations about what each type of soil looks like." Tiffany made a chart, and together they filled it in.

"Look how big the grains of sand are," said Jody. "I bet the water will travel fastest through the sand. There are so many empty spaces!"

Now the girls were ready to begin their experiment. First, they cut the bottoms out of four foam cups. Then they covered the bottom of each one with a coffee filter. Next, they taped the filters to the cups.

Jody started to put a handful of soil into one of the cups.

"Wait!" said Tiffany. "We have to measure the soil. Each cup has to have the same amount."

"You're right!" Jody put the soil back. "Let's use 100 g of each kind of soil."

"That should work," said Tiffany. They filled each foam cup with a different kind of soil. Then they put each foam cup into a clear plastic cup.

"Look," said Tiffany. "The foam cups just fit. When we pour water in, it will come out the bottom through the coffee filters and into the plastic cups."

"We'd better get a stopwatch," said Tiffany. "We can see how long it takes for the water to start coming through. We'll also need to measure how much water comes through," said Jody. "After we put the water in, let's time each cup for 5 minutes. Then we can make observations."

1. **What is the girls' hypothesis?**

_____

2. **What is the independent variable in this experiment?**

_____

3. **Why did Tiffany tell Jody that they had to measure the amount of soil in the cups?**

_____

