



Warm Up

Date: _____



Write a better question:

1. Do you get a lot of sleep on school nights? Yes No
How much sleep do you get each night? (check one of the following)
5-6hr 7-10hr 11-13hr other

2. What is your favorite reality shows?

- Survivor The Amazing Race Big Brother Kardashian
 other _____

3. Do you prefer ~~greasy~~ potatoes or ~~healthy~~ carrots?

Do you prefer potatoes or carrots?

problem is given extra info so you view carrots (+)

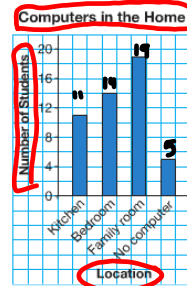
Practice

- Design a questionnaire for collecting data to answer each question. Give at least 4 possible answers for your question each time.
 - What is the favourite food of Grade 6 students?
 - What is the favourite pet of students in your school?
 - Who is the favourite athlete of people in your province or territory?

1a) Which food is your favorite? Check one of the boxes or fill out the blank.
 Pizza Hamburgers Hotdogs Spaghetti Other _____

1b) Which pet would you prefer? Check one of the boxes or fill out the blank.
 ___ cat ___ dog ___ fish ___ hamster Other _____

- This graph shows the results of a questionnaire.
 - Write what the question might have been.
 - Can you tell how many students were given the questionnaire? Explain. *read the bar heights*
 $11+14+19+5 = 50$
 - Write 2 things you know from this questionnaire.



2a) Which room do you keep your computer in? Check one of the boxes or fill out the blank.

___ Kitchen ___ Bedroom
 ___ Family room ___ No Computer

2c) Most people keep their computer in the family room
 More people have computers than don't have computers

- Think of a questionnaire you could hand out in your school.
 - Write a question you could ask.
 - How do you know if your question is a fair question?

- Each question (written in italics) can be improved. Write a better question for each. Explain why you think it is better.
 - To discover how much time each person spends doing homework each day:
Do you spend a lot of time each day doing homework?
 - To find out how students get to school:
Do you usually walk to school or ride your bike?
 - To find out the favourite type of TV programs:
Do you prefer to watch mindless comedies or exciting dramas?

4a) How much time do you spend on homework each day? Check one of the boxes or fill out the blank.

None less than 20 min between 20-40 min an hour
 Other _____

This question gives people a choice and replaces "a lot" with exact amounts, since everyone interprets a lot different ways

4b) How do you travel to school each morning? Check one of the boxes or fill out the blank.

Bus Walk Bike Car (with adult) Other _____

This question gives people a choice

4c) Which type of movie would you rather watch? Check one of the boxes or fill out the blank.

Drama Comedy Sci-Fi Horror Other _____

This question gives choices and does not imply one choice is better than then other. The word mindless makes this question bias

5. Ariel wanted to find out what the Grade 6 students in her school wanted to be when they left school. She wrote this question.

What do you want to be when you leave school? Check one.			
Astronaut <input type="checkbox"/>	Designer <input type="checkbox"/>	Mechanic <input type="checkbox"/>	Nurse <input type="checkbox"/>

Ariel gave this question to the 76 students in Grade 6. Forty-five people answered the question. Here are the results.

Ariel concluded that most students will become astronauts or designers when they leave school.

- Is Ariel's conclusion valid? Explain.
- What might Ariel have done to improve her question?



Occupation	Boys	Girls
Astronaut	HHH HHH	HHH III
Designer	HHH	HHH HHH I
Mechanic	III	I
Nurse	II	HHH

a) Ariel's conclusion is not valid since there are so many jobs out there that are not a choice.

b) Ariel should include an other blank so that students could add a choice that is not on the list.

- Two people want to open a shoe store at the local mall. They want to know what types of shoes they should stock.
 - How could a questionnaire be helpful?
 - Design a questionnaire the people could use to help them make the best decision.



- What is your classmates' favourite way of keeping in touch with their friends?
 - Make a prediction. **Cell phone**
 - Design a questionnaire you could use to find out.
 - Ask the question. Tally the results.
 - How did the results compare with your prediction?

- What is the favourite type of music of students in your class?
 - Design a questionnaire you could use to find out.
 - Predict the results of your questionnaire.
 - Ask the question. Record the results.
 - How did the results compare with your prediction?
 - What else did you find out from your questionnaire?

Collect this question

SP2: Select, justify and use appropriate methods of collecting data, including: • questionnaires • experiments • databases • electronic media. [C, PS, T]

SP3 Graph collected data and analyze the graph to solve problems.

SP4 Demonstrate an understanding of probability by: • identifying all possible outcomes of a probability experiment • differentiating between experimental and theoretical probability • determining the theoretical probability of outcomes in a probability experiment • determining the experimental probability of outcomes in a probability experiment • comparing experimental results with the theoretical probability for an experiment.

SCO: SP2: Select, justify and use appropriate methods of collecting data, including: <ul style="list-style-type: none"> • questionnaires • experiments • databases • electronic media. [C, PS, T]			
[C] Communication [T] Technology	[PS] Problem Solving [V] Visualization	[CN] Connections [R] Reasoning	[ME] Mental Math and Estimation

Scope and Sequence of Outcomes

Grade Five	Grade Six	Grade Seven
SP1 Differentiate between first-hand and second-hand data.	SP2 Select, justify and use appropriate methods of collecting data, including: questionnaires; experiments; databases; electronic media.	SP3 Construct, label and interpret circle graphs to solve problems.

SCO: SP3: Graph collected data and analyze the graph to solve problems. [C, CN, PS]			
[C] Communication [T] Technology	[PS] Problem Solving [V] Visualization	[CN] Connections [R] Reasoning	[ME] Mental Math and Estimation

Scope and Sequence of Outcomes

Grade Five	Grade Six	Grade Seven
SP2 Construct and interpret double bar graphs to draw conclusions.	SP3 Graph collected data and analyze the graph to solve problems.	SP3 Construct, label and interpret circle graphs to solve problems.

When Conducting Experiments to Gather Data

You must have a measurable question

Test the question multiple times

Keep the experiment the same for each test

Connect

Jasbir and Summer wanted to answer this question:

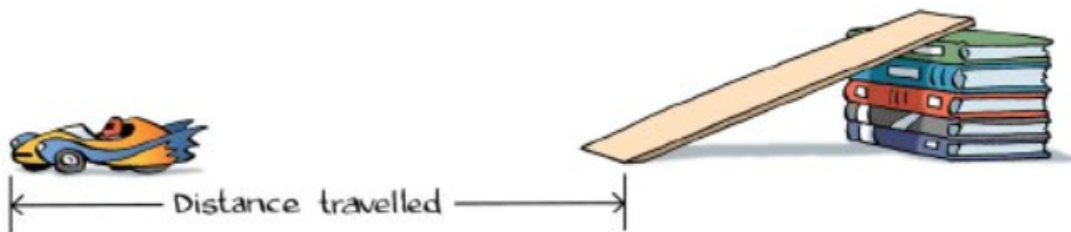
Does doubling the height of the ramp double the distance a toy car travels?

To find out, they let a toy car roll down a ramp of height 10 cm, then measured the distance the car travelled from the end of the ramp.

Then, the students doubled the height of the ramp to 20 cm, and then to 40 cm.

They did 3 trials for each height of the ramp, and recorded the results.





Here are the data the students collected.

Ramp Height	Distance Travelled		
	Trial 1	Trial 2	Trial 3
10 cm	60 cm	58 cm	61 cm
20 cm	118 cm	120 cm	121 cm
40 cm	235 cm	241 cm	238 cm

The car travelled about 60 cm when the height of the ramp was 10 cm.

When the height of the ramp was doubled to 20 cm,
the distance travelled also doubled: $60 \text{ cm} \times 2 = 120 \text{ cm}$

When the height of the ramp was doubled to 40 cm,
the distance travelled also doubled: $120 \text{ cm} \times 2 = 240 \text{ cm}$

From the data, Jasbir and Summer concluded that doubling the height of the ramp
doubles the distance a toy car travels.

Class/Homework

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#3 only


Then Project

could do 4 & 5 after
experiment

 Alphabet Experiment

 Blinking Experiment

 Spoon Experiment

Name _____ Date _____

Master 7.12

Step-by-Step 2

Lesson 2, Question 3

Step 1 Which letter of the alphabet do you think is used most often in the English language? _____ Why do you think so?

Step 2 Choose a paragraph from a book you are currently reading.
Count the number of times each letter occurs in the paragraph.
Record the results in the tally chart.

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Step 3 Which letter occurs most often? _____

Step 4 Write 2 other things you know from your data.

1. _____

2. _____

Practice

1. Work with a partner to answer this question:

Which sum occurs most often when you roll 2 dice labelled 1 to 6?

You will need two dice labelled 1 to 6.

Take turns to roll the dice.

Find the sum of the numbers on the dice.

Each student rolls the dice 25 times.

- Record the results.
- Which sum occurred most often?
- How do your results compare with those of another pair of students?
- What other questions could you answer using these data? Explain.

Sum	Tally	Total
2		
3		
4		

2. Work with a partner to answer this question:

Which way is a spoon more likely to land:
rightside up or upside down?

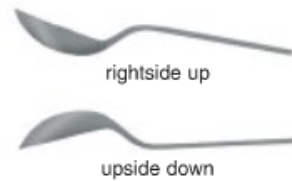
You will need a bag and 10 plastic spoons.

Place the spoons in a bag, shake them up,
then drop them on the floor.

Count how many spoons land rightside up and
how many land upside down. Record your results.

Repeat the experiment 9 more times. Make sure you drop the spoons
from the same height each time. Add the results.

Which way is a spoon more likely to land? Why do you think so?





3. Which letter of the alphabet occurs most often in the English language?
- a) Predict the answer to the question above. Explain your prediction.
 - b) Design an experiment you can use to check your prediction.
 - c) Conduct the experiment. Record the results.
 - d) Use the data you collected to answer the question above. What other conclusions can you make from your data?



4. Morgan experimented with 3 different paper airplanes to answer this question: Which airplane travels the greatest distance? Morgan flew each plane 4 times and measured the length of each flight. Here are the data Morgan collected.

Airplane Design	Trial 1	Trial 2	Trial 3	Trial 4
The Dart	6.3 m	18.4 m	12.2 m	4.1 m
Flying Squirrel	11.3 m	10.5 m	9.8 m	11.2 m
Speed-o-matic	3.1 m	2.5 m	2.1 m	3.6 m

What answer would you give to the question above? Explain your choice.

5. A Grade 6 class experimented with radish seeds and bean seeds. The students wanted to answer this question:
Will the seeds sprout best in tap water, salt water, or sugar water?
Here are the data the students collected. Use these data.
What conclusion can you make?
Why do you think this might be?

Type of Seed	Percent of Seeds That Sprouted After One Week		
	Tap water	Sugar water	Salt water
Radish	60%	30%	10%
Bean	50%	18%	7%

6. How long does it take a Grade 6 student to write the alphabet backward: 30–44 s, 45–60 s, or more than 60 s?
- Predict the answer to the question above.
Explain your prediction.
 - Design an experiment you can use to check your prediction.
 - Conduct the experiment. Record the results.
 - Use the data you collected to answer the question above.
What other conclusions can you make from your data?



7. Which method would you use to collect data to answer this question: How many times can you blink in 5 s?
Explain your choice of method.
Collect the data. Answer the question. Show your work.

Attachments

Alphabet Experiment.docx

Blinking Experiment.docx

Spoon Experiment.docx