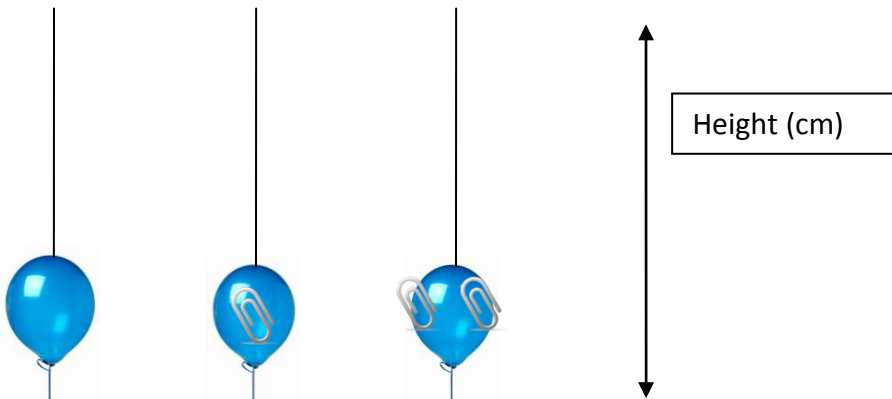


PART A – MULTIPLE CHOICE

Circle the correct response.

**Use the information below to answer questions 1+2**

Jessica wants to know which balloon rocket will travel the farthest up the string given the scenarios below. Her question is: “How will the number of paper clips attached to a balloon rocket affect the height that each balloon rocket travels?”



0 paper clips    1 paper clip    2 paper clips

**1)What information will she need to record in order to answer her question? (205-5)**

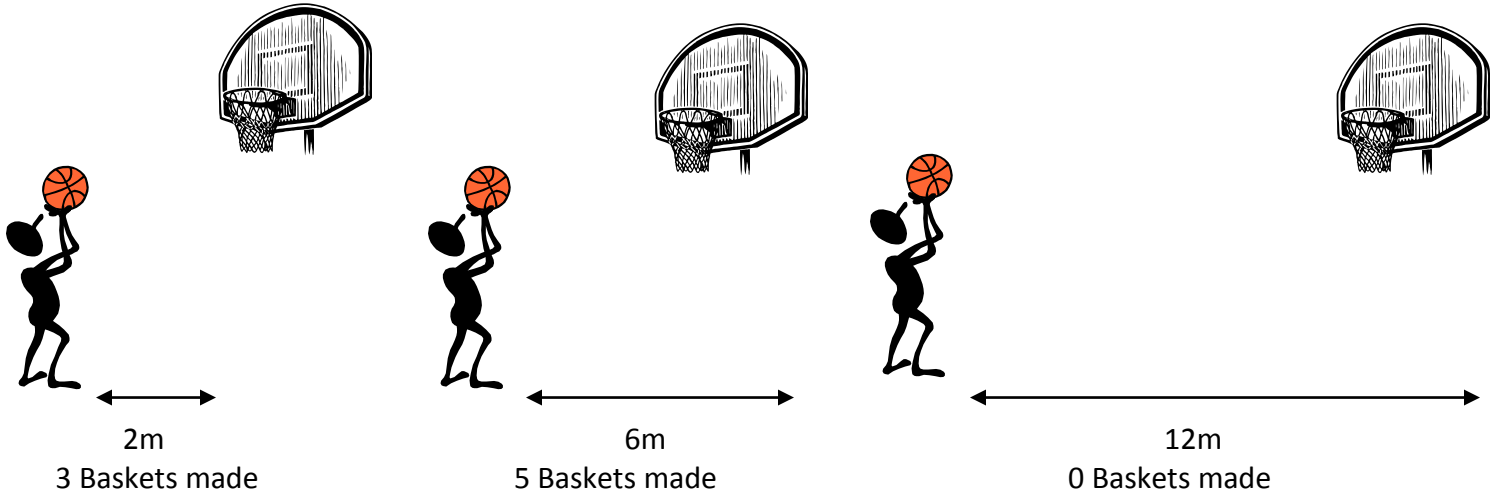
- a) Time until it takes for the balloon to reach the end of the string
- b) Height travelled and time it takes to reach the end of the string
- c) Number of paper clips added and height travelled
- d) Size of balloon and height travelled

**2)What does Jessica need to control to make sure that this is a fair test? (205-1)**

- a)The balloons should be different sizes.
- b)The length of the strings should be the same.
- c)She will need to use different size paper clips.
- d)The speed of each balloon should be the same.

**Use the information below to answer questions 3+4**

John recorded how many times he scored a basket at various locations during Monday's practice. He shot 10 times at each location. His results were as follows:



**3) What variables should he include in his graph to show a clear picture of his results? (204-4)**

- a) Amount of Baskets Made and Distance
- b) Amount of Baskets Made and Time
- c) Amount of Attempts and Amount of Baskets
- d) Amount of Attempts and Distance

**4) John wants to investigate a similar topic next practice. What is a good follow-up question that he could test? (206-9)**

- a) How many laps can I run in 2 minutes?
- b) How will distance affect the number of times that I catch a volleyball?
- c) If I take 15 shots instead of 10 at each place, will my percentage of baskets increase?
- d) If I shoot from half-court, then it will go in.

**5) Amy was using a flashlight to read her novel late last night. She thought it would emit brighter light than the light on his cell phone. What does she need in order to test the brightness of each light source? (204-4)**

- a) Flash Light , Cell Phone and Bright Room
- b) Flash Light , Cell Phone and Dark Room
- c) Flash Light and Cell Phone
- d) Flash Light , Cell Phone and Novel

**6) A student added paper clips to a balloon rocket to investigate the effect of weight on the height of the balloon rocket. Based on the pattern in the data below, predict what the distance will be when 8 paper clips are added to the balloon. (204-3)**

- a) 10 cm
- b) 35 cm
- c) 40 cm
- d) 50 cm

	Distance	Quantity of Paper Clips	Time
Balloon 1	195 cm	0	5 sec
Balloon 2	83 cm	2	3 sec
Balloon 3	35 cm	4	1 sec

**7) Jack inflated a balloon and rubbed it on Sally's head. He noticed that his balloon stuck to the wall afterwards because of static electricity. He then rubbed the balloon on a desk and tried to stick it to the wall and the balloon fell to the floor. Based on these results, which conclusion statement is most accurate? (206-3)**

- a) The balloon stuck to the wall
- b) When the balloon was rubbed, the hair generated less static electricity than the desk
- c) The balloon stuck to the wall when rubbed against the desk
- d) When the balloon was rubbed, the hair generated more static electricity than the desk

**8) During one very long and snowy winter, the population of deer in an area decreased drastically due to lack of food and inability to escape predators. If the next winter brings similar conditions, predict what will most likely happen to the deer population. (204-3)**

- a) The population of deer in that area would increase.
- b) The population of deer in that area would stay the same.
- c) The population of deer in the area would decrease.
- d) The population of rabbits would increase.

**9) Jill wanted to see how much salt could be dissolved in water of different temperatures. She had four beakers of water that she filled from the tap as she counted to five. They were at different temperatures: 1°C, 5°C, 20°C and 32°C. She put 2 tablespoons of salt in each beaker and each beaker was stirred at the same rate. Why was this not a fair test? (204-7)**

- a) The temperatures were the same.
- b) She didn't measure the amount of water in each beaker.
- c) She put different amounts of salt in each beaker.
- d) She didn't stir all of the beakers.

**10) An animal lives in an environment with the following characteristics:**

- Hot and dry
- Light brown sand covering the ground
- Very few water sources/very little rain
- Experiences extreme sand storms
- Very little plant life

**What question could the scientist ask if she wants to learn more about this animal? (204-3, 206-1)**

- a) What is the average temperature of the sand?
- b) How long can the plants go without water?
- c) How is the animal adapted for surviving in the rain-forest?
- d) How long can the animal go without water?

**11) Wild turkeys aren't normally found in NB, but now people are bringing them in and introducing them into the wild. Biologists believe they threaten native bird species because they are competing for food.**

**What is the best way for a scientist to investigate this problem? (204-6)**

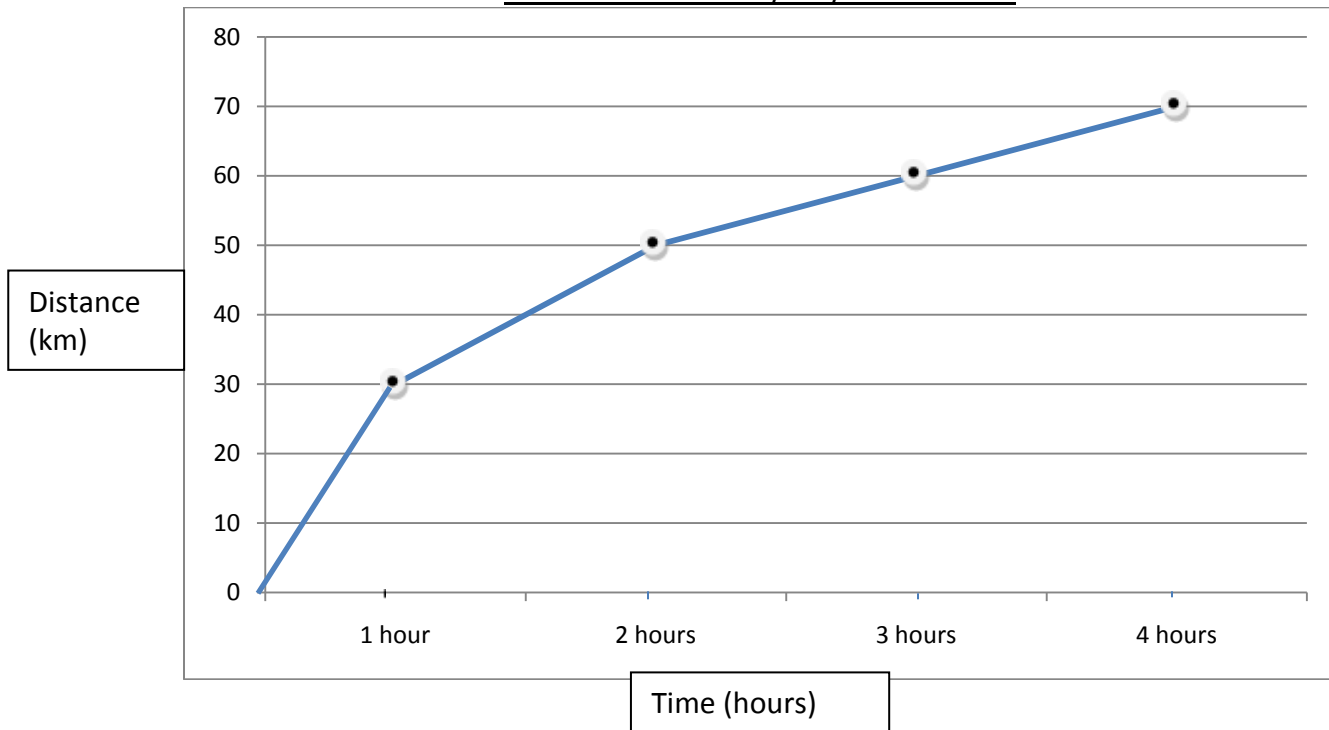
- a) Observe how the turkeys compete for food with other bird species for a day.
- b) Observe the amount of turkeys humans eat.
- c) Observe how the turkeys compete for food with other bird species over several months.
- d) Immediately ban importation of wild turkeys.

**Use the following information to answer questions 12, 13, and 14**

A cyclist is travelling by bicycle over a period of 4 hours. Use the information below to answer the question(s).

(Note: **Speed = Distance / Time**)

Distance Travelled by Bicycle over Time



**12) Which conclusion describes the pattern observed in this graph? (206-3, 207-2)**

- a) Speed has no effect on the amount of distance travelled.
- b) Decreased speed causes an increase in the amount of distance travelled.
- c) Increased speed causes a decrease in the amount of distance travelled.
- d) Decreased speed causes a decrease in the amount of distance travelled.

**13) Which statement is true about the data above? (206-3, 207-2)**

- a) The cyclist travelled the same distance each hour.
- b) The cyclist travelled half of the total distance in the first hour, then slowed down.
- c) The cyclist travelled 10 km in the last hour.
- d) The cyclist travelled 50 km between the first hour and the second hour.

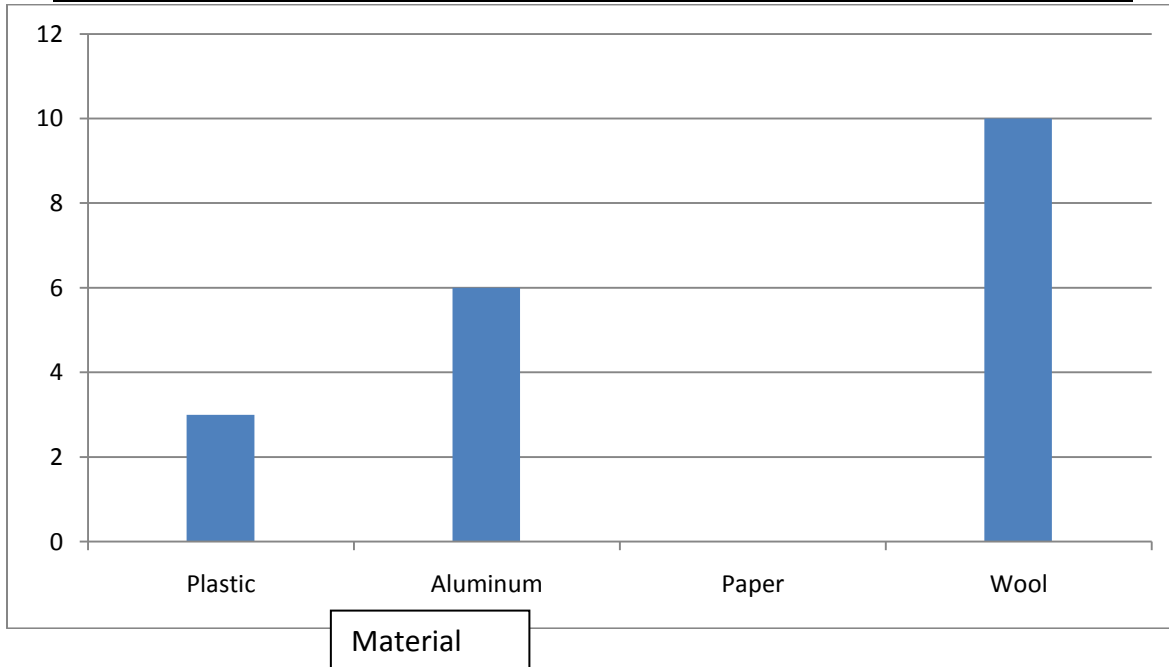
**14) The cyclist decides to make a change to the bicycle. Which change to the bicycle would most likely cause increased speed? (206-6)**

- a) The cyclist changes from water to energy drinks.
- b) The cyclist modifies the bicycle to make it lighter.
- c) The cyclist upgrades the braking system.
- d) The cyclist takes a different path.

**Use the following information to answer questions 15, 16, and 17**

A balloon was rubbed against the hair of a student. The balloon was then placed next to small pieces of different materials. The student observed the quantity of pieces that were picked up by the balloon each time. Use the diagram below to answer the questions.

Quantity of pieces of different materials picked up by a balloon rubbed against hair



**15) Which of the following is a conclusion based on this graph? (206-3, 207-2)**

- a) The charged balloon attracted more pieces of aluminum foil than all other materials.
- b) The charged balloon attracted more pieces of wool than all other materials.
- c) Plastic wrap attracted the most electrical charge.
- d) The charged balloon attracted less pieces of aluminum foil than all other materials.

**16) The graph shows that zero pieces of paper were picked up by the balloon. How could this be explained? (206-3, 207-2)**

- a) Paper was not attracted to the balloon.
- b) The balloon wasn't rubbed enough times.
- c) The student forgot to record the results.
- d) All of the above.

**17) As a follow-up experiment, the student decided to rub 4 different balloons against each of the 4 different materials. He rubbed each balloon 20 times against each material and then placed it against the wall.**

**Based on the results in the table above, what should he predict? (204-3)**

- a) The balloon rubbed against the aluminum will stick to the wall the longest.
- b) The balloon rubbed against the paper will stick to the wall the longest.
- c) The balloon rubbed against the wool will stick to the wall the longest.
- d) The balloon rubbed against the plastic will stick to the wall the longest.

**18) Mary wants to explore the characteristics of electricity for her science fair project. She wants to test objects to see if electricity will pass through them or not. She has chosen several materials: aluminum foil, paper, plastic wrap, eraser, a balloon, and a wool sweater.**

**Which of the following is a testable question that she could use to conduct her investigation? (204-2)**

- a) Which materials will attract electricity and which materials will repel electricity?
- b) Which materials will move the farthest distance when connected to a circuit?
- c) Which materials will allow a light bulb to light up when connected to a circuit?
- d) Which of these materials is the lightest when connected to a circuit?

**19) Emily learned how to design a paper airplane during her science class. She wants to know if there is a variable that she can change to help her paper airplane fly a greater distance. Which variable could she change to achieve her desired result? (206-6)**

- a) The shape of the wings
- b) The wind speed
- c) The temperature
- d) The sun

**20) The table below outlines information about the planets in our solar system. Use this information to answer the question(s) below. (206-3)**

Planet	Diameter (km)	Distance from Sun (millions of km)	Temperature (°C)
Mercury	4879	70	350
Venus	12 104	109	480
Earth	12 756	152	22
Mars	6792	249	-23

Based on the information in the table, which of the following is TRUE?

- a) Mercury is bigger than Mars.
- b) Mars has the highest surface temperature.
- c) Venus has the highest surface temperature.
- d) Earth is 152 km from the Sun.

**21) Marco wants to design an experiment about ants. Which steps could he take to follow the scientific method? (204-7)**

- a) Results, Question, Conclusion, Prediction
- b) Question, Prediction, Conclusion, Observation
- c) Prediction, Question, Conclusion, Observation
- d) Question, Prediction, Observation, Conclusion

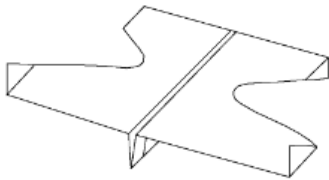
**22) You are given the following substances:**

- **Ketchup**
- **Molasses**
- **Toothpaste**
- **Water**

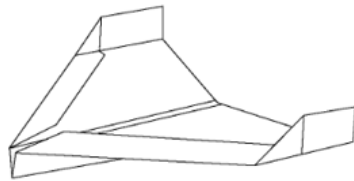
**You want to know which substance would move the slowest when moving down a ramp. How could you plan this as a fair test? (205-1)**

- Use different amounts of ketchup, molasses, toothpaste, and water.
- Mix the substances together.
- Use the same ramp height.
- Use water each time.

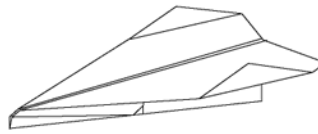
**23) Brayden wants to test the flight distance for three paper airplane designs. What is a testable question that he can write to start his investigation? (204-1,204-2)**



Dragonfly



Condor



Dart

- How will the shape of the airplane affect how high the airplane flies?
- How far will it go?
- How will the design of a paper airplane affect the distance it travels?
- How will gravity affect the distance traveled for a paper airplane?



24) Cody did an experiment at school to see how the weight of paper clips affected the amount of time for a balloon to fall to the ground. He taped a paper clip to the side of a balloon. He taped more and more paper clips to the same balloon and repeated his experiment. Here are his results:

Effect of Adding Paper Clips on Time Balloon Takes to Reach Ground

Number of Paper Clips	Time Balloon takes to reach ground (seconds)
1	10
3	8
5	6
7	4

**Which statement best describes these results? (206-3)**

- a) Each time you add a paper clip the time decreases by two seconds.
- b) Each time you add two paper clips the time decreases by two seconds.
- c) Each time you add seven paper clips the balloon gets slower.
- d) When you take away two paper clips the balloon gets heavier.

25) Cody tried the same balloon experiment at home. Here are the results from his experiment at school and his experiment at home:

Effect of Adding Paper Clips on Time Balloon Takes to Reach Ground

SCHOOL

HOME

Number of Paper Clips	Time balloon takes to reach ground (seconds)
1	10
3	8
5	6
7	4

Number of Paper Clips	Time balloon takes to reach ground (seconds)
1	12
3	11
5	10
7	9

**What is a possible explanation for the different results? (104-5)**

- a) He used different colour paper clips.
- b) He dropped the balloon from the same height.
- c) He used different sized paper clips.
- d) He used a different timer.

## CONSTRUCTED RESPONSE

1)Your class is taking part in an exciting project with the Canadian Space Agency (CSA). CSA has sent tomato seeds to the International Space Station to see if they can be used as a food source for astronauts. During the same timeframe, your class is going to grow tomato plants in the classroom.

The overall goal of the project is to observe the difference between tomato seeds grown in space and tomato seeds grown on Earth in your classroom.



**A)Write a testable question that your class can investigate related to the overall goal of the project. (204-2)**

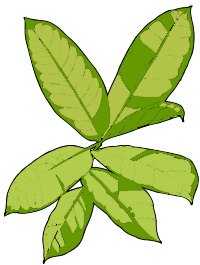
**B)Make a prediction about the possible differences or similarities between tomato plants grown in space and tomato plants grown on Earth. (204-3)**

**C)Write a series of 5 or more steps to help conduct an experiment in your classroom related to the overall goal of the project. (204-7)**

2) A scientist poses a question: "How can I grow plants in different conditions?"

**A) Identify and explain 3 or more variables that this scientist needs to control in order to answer this question. (204-4)**

**B) The scientist succeeds in growing these three plants. Describe the similarities and differences that you observe. Write 3 or more observations. (205-5)**



Plant #1



Plant #2



Plant #3

**C) Write a follow-up question that the scientist could investigate next. (206-9)**

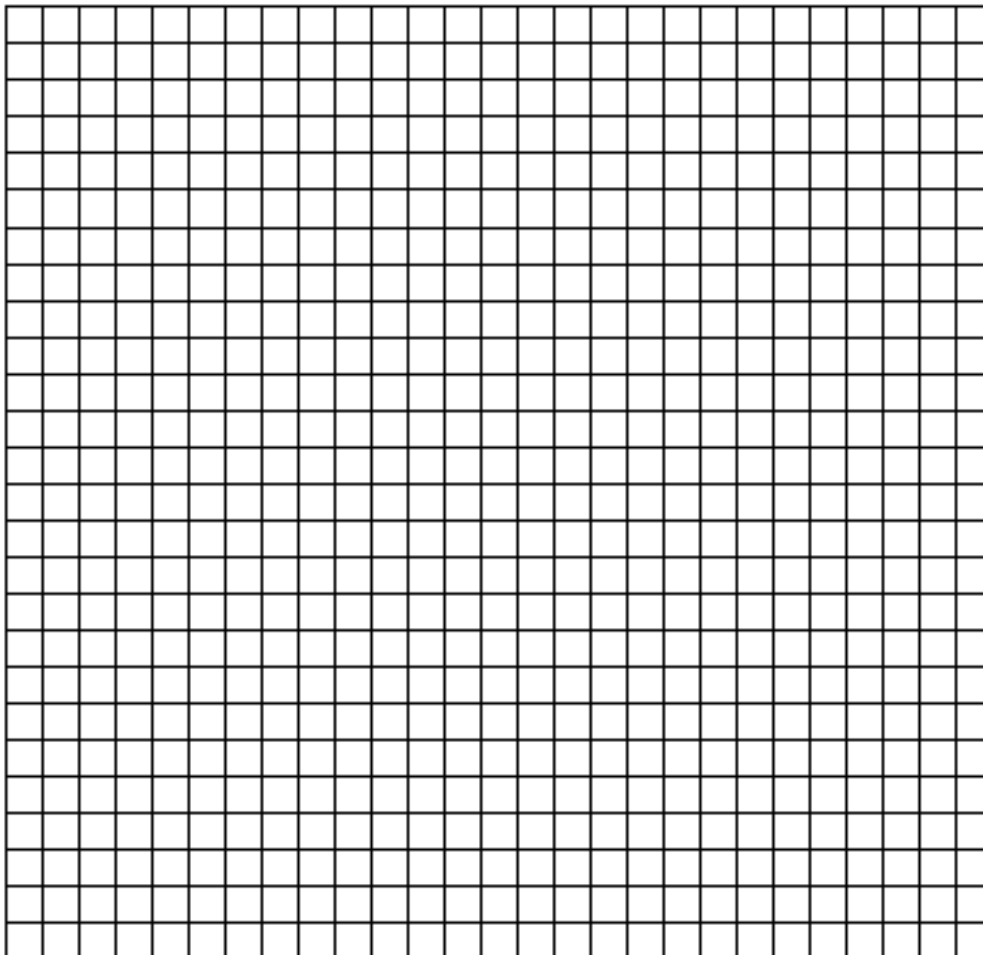
3)At Max’s birthday party, his friends participate in a flight simulator video game competition on his Playstation 4. They play two rounds. The first round is a practice round and the second round is the championship round. The table below was used to record the results of the competition:



Name	Practice Round Points	Championship Round Points
Justin	45	65
Robert	15	30
Max	100	120
Charles	55	5



A)Use the results of this table to create a graph. (205-7, 207-2)



B) Describe a pattern or irregularity that you observe in the data. (206-3)