MSTAR PRACTICE WORKSHEET

Lesson 9-1: Explore Relationships Between Two Variables

Grade 6 Mathematics · Standard 6.AT.11

Name: _____ Date: _____

These are MSTAR-style questions written for this curriculum to rehearse the format. They are not official Maryland assessment items. MSTAR — Maryland's new state test, first given in spring 2027 — uses the same kinds of questions you see here: selected response, select-all, two-part evidence questions, and written responses.

Part A — Skills Check

Warm up with the lesson's core skills — one best answer each.

Question 1 SELECTED RESPONSE · 1 POINT

Akela chooses how many hours of sunlight each tray gets. Which is the INDEPENDENT variable?

(A) Plant height

(B) Hours of sunlight

(C) Number of trays

(D) Number of seeds

Question 2 SELECTED RESPONSE · 1 POINT

In Akela's experiment, which is the DEPENDENT variable?

(A) Hours of sunlight

(B) The kind of seed

(C) The size of the tray

(D) Plant height

Question 3 SELECTED RESPONSE · 1 POINT

Claire burned 123 Calories on a 30-minute jog. Which quantity is subject to choice?

(A) Calories she burns

(B) Her heart rate

(C) Minutes she jogs

(D) The weather

Question 4 SELECTED RESPONSE · 1 POINT

Which sentence is written in the correct order?

(A) Minutes jogged depends on Calories burned.

(B) Calories burned depends on Calories burned.

(C) Neither quantity depends on the other.

(D) Calories burned depends on minutes jogged.

Question 5 SELECTED RESPONSE · 1 POINT

A tray that got 2 hours of sun grew to 4 cm. A tray that got 6 hours grew to 12 cm. As sunlight increases, plant height...

(A) decreases

(B) stays the same

(C) increases

(D) cannot be determined

Question 6 SELECTED RESPONSE · 1 POINT

You buy tickets at $45 each. Which quantity depends on the other?

(A) Total cost depends on number of tickets

(B) Number of tickets depends on total cost

(C) The price per ticket depends on the total cost

(D) Nothing depends on anything here

Part B — Test-Format Questions

These match the state test's formats: two-part questions, select-all, and written responses.

Question 7 TWO-PART QUESTION

Part A

Devon adds a different number of scoops of plant food to each tray of seedlings. Two weeks later he counts the new leaves on every tray. Which pair correctly names the variables?

Fill in the bubble next to the one best answer.

(A) Independent: new leaves counted; Dependent: scoops of plant food

(B) Independent: scoops of plant food; Dependent: new leaves counted

(C) Independent: the number of trays; Dependent: scoops of plant food

(D) Independent: new leaves counted; Dependent: the two weeks of growing time

Part B

Answer Part A before Part B — Part B asks about your reasoning.

Which sentence shows why the pair chosen in Part A is correct?

(A) The scoops of plant food depend on the number of new leaves, because Devon counts the leaves last.

(B) The scoops are independent because the number of scoops is the larger number.

(C) The number of new leaves depends on the scoops of plant food, because Devon chooses the scoops and the leaves respond.

(D) The number of new leaves is independent because it is the quantity the question asks about.

Question 8 SELECT ALL THAT APPLY

Select ALL statements that name the independent variable correctly for their own situation.

Mark the box next to EVERY answer that is true. More than one is correct.

[A] A gardener chooses how many minutes to run the sprinkler, so the minutes the sprinkler runs is the independent variable.

[B] A student hangs different numbers of weights on a spring, so the stretch of the spring is the independent variable.

[C] Claire decides how long to jog, so the minutes she jogs is the independent variable.

[D] The total cost of the tickets is the independent variable, because the cost is the amount the problem asks for.

[E] A tray receives a set number of hours of sunlight each day, so the hours of sunlight is the independent variable and the plant height depends on it.

When you finish, check your reasoning with your teacher or family. Your teacher has the scoring guide for the written responses.