MSTAR PRACTICE WORKSHEET

Lesson 9-4: Apply Two-Variable Relationships to Solve Problems

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

The assembly line produces 2.5 cars per hour. How many cars does it produce in one 8-hour shift?

(A) 10.5 cars

(B) 16 cars

(C) 20 cars

(D) 25 cars

Question 2 SELECTED RESPONSE · 1 POINT

Let h = hours of operation and c = cars produced. Which equation represents the assembly line?

(A) c = 2.5h

(B) c = 2.5 + h

(C) h = 2.5c

(D) c = h ÷ 2.5

Question 3 SELECTED RESPONSE · 1 POINT

Using the table (1 hour, 2.5 cars; 8 hours, 20 cars; 16 hours, 40 cars), how many cars are produced in 24 hours?

(A) 26.5 cars

(B) 40 cars

(C) 50 cars

(D) 60 cars

Question 4 SELECTED RESPONSE · 1 POINT

Last year the student council washed 34 cars and raised $408. How much did they charge per car?

(A) $10

(B) $12

(C) $34

(D) $374

Question 5 SELECTED RESPONSE · 1 POINT

At $12 per car, how much does the student council raise by washing 20 cars?

(A) $32

(B) $120

(C) $200

(D) $240

Question 6 SELECTED RESPONSE · 1 POINT

The price is set at $12 per car. Which is the DEPENDENT variable at the car wash?

(A) The number of cars washed

(B) The total amount of money raised

(C) The price of $12 per car

(D) The number of students on the council

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

A bottling machine fills 45 bottles each minute. The relationship is b = 45m, where m is the number of minutes the machine runs and b is the number of bottles filled. The crew needs 1,800 bottles. How many minutes must the machine run?

Fill in the bubble next to the one best answer.

(A) 40 minutes

(B) 45 minutes

(C) 1,755 minutes

(D) 81,000 minutes

Part B

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

Which reasoning justifies the number of minutes chosen in Part A?

(A) The machine fills 45 bottles in a minute, so 1,800 bottles take 45 minutes.

(B) Multiply instead: 1,800 × 45 = 81,000, because a rate is always multiplied by the total.

(C) Substitute 1,800 for b to get 45m = 1,800, then divide both sides by 45, since 45 is multiplied by m.

(D) Subtract the rate: 1,800 − 45 = 1,755, because the machine already filled 45 bottles.

Question 8 WRITTEN RESPONSE · 2 POINTS

Type II Reasoning: Rounding Down on an At Least Problem

> The paint booth coats 6 car doors every hour, so d = 6h, where h is the hours the booth runs and d is the doors coated. Marisol needs 100 doors coated. She writes 6h = 100, divides to get 100 ÷ 6 = 16.66..., says the booth needs about 16 hours, and schedules 16 hours.

Explain Marisol's misconception and give the correct number of whole hours the booth must run.

Write your answer in complete sentences. Show or explain your mathematical thinking.

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