MSTAR PRACTICE WORKSHEET

# Lesson 8-1: Understand Equations and Their Solutions

Grade 6 Mathematics · Standard 6.AT.8

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

Which equation represents: 'A number plus 12 equals 30'?

(A) n + 12 = 30

(B) n – 12 = 30

(C) 12n = 30

(D) n / 12 = 30

**Question 2** SELECTED RESPONSE · 1 POINT

Which equation represents: 'Seven less than a number is 18'?

(A) n – 7 = 18

(B) 7 – n = 18

(C) n + 7 = 18

(D) n / 7 = 18

**Question 3** SELECTED RESPONSE · 1 POINT

Which equation represents: 'Three times a number equals 21'?

(A) 3n = 21

(B) n + 3 = 21

(C) n – 3 = 21

(D) n / 3 = 21

**Question 4** SELECTED RESPONSE · 1 POINT

Is n = 3 a solution of n + 5 = 9?

(A) Yes, because 3 is smaller than 9

(B) No, because 3 + 5 = 8, which does not equal 9

(C) Yes, because 3 + 5 is close to 9

(D) You cannot tell without solving first

**Question 5** SELECTED RESPONSE · 1 POINT

Which equation represents: 'A number divided by 4 equals 8'?

(A) n / 4 = 8

(B) 4n = 8

(C) n – 4 = 8

(D) n + 4 = 8

**Question 6** SELECTED RESPONSE · 1 POINT

A detective found some fingerprints on Monday and 14 more on Tuesday, for a total of 30. Which equation represents this?

(A) f + 14 = 30

(B) f – 14 = 30

(C) 14f = 30

(D) f / 14 = 30

## 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

Marisol tests values in the equation 7 + m = 23. Which value of m makes the equation true?

*Fill in the bubble next to the one best answer.*

(A) m = 9

(B) m = 16

(C) m = 23

(D) m = 30

### Part B

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

Which reasoning best justifies that answer?

(A) Adding the two numbers written in the equation, 7 + 23, gives the value of m.

(B) The equal sign means the answer is always the number written to the right of it.

(C) Substituting 16 for m gives 7 + 16 = 23, so both sides of the equation have the same value.

(D) Any number can replace m because m is a variable, and variables can change.

**Question 8** SELECT ALL THAT APPLY

Select ALL statements that are true about equations and their solutions.

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

[A] An equation is a math sentence that uses an equal sign to show two expressions have the same value.

[B] You can test a value by substituting it for the variable and checking whether both sides are equal.

[C] The value n = 6 is a solution of n + 9 = 15 because 6 + 9 = 15.

[D] The expression 4y + 2 is an equation because it contains a variable.

[E] The value x = 15 is a solution of x − 4 = 9 because 15 − 4 = 9.

### Part C — Show Your Thinking

Answer in writing, the way the state test's constructed responses work.

**Question 9** WRITTEN RESPONSE · 2 POINTS

Write a real-world situation that can be modeled by the equation n / 5 = 9. Explain what n represents and verify your equation makes sense.

*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.