MSTAR PRACTICE WORKSHEET

Lesson 8-7: Equations and Inequalities Problem Solving

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

A museum has some paintings. After adding 12, they have 45. Which equation models this?

(A) p + 12 = 45

(B) p − 12 = 45

(C) 12p = 45

(D) p / 12 = 45

Question 2 SELECTED RESPONSE · 1 POINT

A detective needs more than 8 hours to finish the investigation. She has already worked 3 hours. Which inequality represents the additional hours h she needs?

(A) 3 + h > 8

(B) 3 + h = 8

(C) h > 3

(D) 8 + h > 3

Question 3 SELECTED RESPONSE · 1 POINT

Which model is correct for: 'A number divided by 6 equals 7'?

(A) n / 6 = 7

(B) 6n = 7

(C) n − 6 = 7

(D) n + 6 = 7

Question 4 SELECTED RESPONSE · 1 POINT

A bus can carry at most 48 passengers. There are already 31 on board. Which inequality shows how many more can board?

(A) $31 + p \leq 48$

(B) $31 + p > 48$

(C) $31 + p = 48$

(D) $p - 31 \leq 48$

Question 5 SELECTED RESPONSE · 1 POINT

A student solved $4n = 52$ and got $n = 13$. Is the answer reasonable if n represents the number of notebooks in a box?

(A) No — 13 is too many notebooks

(B) No — the answer should be 48

(C) Yes — 13 notebooks per box is reasonable

(D) Yes — but only if n is a fraction

Question 6 SELECTED RESPONSE · 1 POINT

Room 2: The vault keypad clue reads, 'A number of stolen coins plus 6 equals 14.' Solve $x + 6 = 14$ to find the code x.

(A) $x = 2$

(B) $x = 6$

(C) $x = 8$

(D) $x = 20$

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 school van can carry at most 14 passengers. There are already 9 passengers on board. Let p be the number of additional passengers who can get on. Which inequality models this situation?

Fill in the bubble next to the one best answer.

(A) $9 + p \leq 14$

(B) $9 + p \geq 14$

(C) $9 + p < 14$

(D) $p - 9 \leq 14$

Part B

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

Which reasoning justifies that model and gives the greatest number of additional passengers?

(A) The van must end up completely full, so $9 + p = 14$ and exactly 5 more passengers must get on.

(B) The 9 passengers are taken away from p, so $p - 9 \leq 14$ and at most 23 more passengers can get on.

(C) The total cannot pass the limit of 14, so $9 + p \leq 14$ and at most 5 more passengers can get on.

(D) The words 'at most' mean the total has to be more than 14, so $9 + p \geq 14$ and 5 or more passengers can get on.

Question 8 SELECT ALL THAT APPLY

A club has already sold 46 tickets and must sell at least 120 tickets in all. Let t be the number of additional tickets the club sells. Select ALL statements that are true about this situation.

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

[A] The inequality $46 + t \geq 120$ models the situation.

[B] The club must sell at least 74 more tickets to reach its goal.

[C] Selling exactly 74 more tickets reaches the goal.

[D] The inequality $46 + t \leq 120$ models the situation.

[E] Selling 70 more tickets reaches the goal.

Part C — Show Your Thinking

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

Question 9 WRITTEN RESPONSE · 2 POINTS

Create two word problems about the same situation: one that requires an equation and one that requires an inequality. Solve both and explain why the models are different.

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.