Unit 1

Directions:

Today, you will be taking Unit 1 of the Grade 7 Mathematics Practice Test.

Read each question carefully. Some questions will ask you to choose one correct answer, while others will ask you to choose more than one correct answer. Mark your answers by filling in the circles in your Test Booklet for the answers you choose.

If a question asks you to show or explain your work, you must do so to receive full credit. Be sure to:

- Write your response in the box provided in your Test Booklet.
- Label each part of your work if a question has multiple parts, and clearly identify your answer for each part.
- Respond in the box provided. Crossed-out work, writing that falls outside of the box, or work on scratch paper will not be scored.

Do not make any stray marks on the Test Booklet. If you need to change an answer, be sure to erase your first answer completely.

Calculator Directions:

In the first section of this unit, you may not use a calculator. You will not be allowed to return to the non-calculator section of the test after you have started the calculator section of the test.

If you do not know the answer to a question, skip it and go on. If you finish the non-calculator section of Unit 1 early, you may review your answers and any questions you may have skipped in the non-calculator section ONLY.

Do NOT go on to the calculator section in Unit 1 until directed to do so.



GO ON I

Unit 1 - Section 1 (Non-Calculator)

This unit has two sections: a non-calculator and a calculator section.

You will now take the first section of this unit in which you may not use a calculator. You will not be allowed to return to the non-calculator section of the test after you have started the calculator section. You will need to finish both sections within the allotted testing time.

Once you finish the non-calculator section, read the directions in your Test Booklet on how to continue.

1. Which equation has a constant of proportionality equal to 4?

(a) 4y = 4x(b) 4y = 12x

- ⓒ 3y = 4x
- \bigcirc 3y = 12x

2. Which expressions are equivalent to $-3 \cdot \frac{4}{-5}$? Select **each** correct answer.

(A) $\frac{-3}{-5} \cdot 4$

(B) $-\frac{3}{5} \cdot 4$

 $\odot \frac{-3 \cdot 4}{-3 \cdot (-5)}$

(b) $-3 \cdot 4 \cdot \frac{-1}{5}$

(E)
$$\frac{3}{5} \cdot 4$$

 $\bigcirc \quad \frac{3 \cdot 4}{5}$



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GO ON 🕨

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3. An airplane's altitude changed −378 feet over 7 minutes. What was the mean change of altitude in feet per minute?

Enter your answer in the box.



• 4. Which expression is equivalent to $\frac{1}{4}(8 - 6x + 12)$?

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- (a) $\frac{7}{2}x$ (b) $-\frac{13}{2}x$
- ⓒ -6x + 14

(b)
$$-\frac{3}{2}x + 5$$

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5. The numbers of parts produced by three different machines are shown in the table.

Minutes	Machine Q	Machine R	Machine S
1	9	8	6
3	18	24	18
9	27	72	52

Numbers of Machine Parts

Only one of the machines produces parts at a constant rate. Which equation represents *y*, the number of parts produced in *x* minutes, for the one machine that produces parts at a constant rate?

- (A) y = 3x
- \bigcirc y = 8x
- $\bigcirc y = 9x$



5

SERIAL #

GO ON 🕨

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6. Which relationships have the same constant of proportionality between y and x as in the equation $y = \frac{1}{3}x$? Select **each** correct answer.



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1.5 -2.7 -5.4 2.4 -0.9 0.5 0.8 -1.8



D	x	-1.5	0	1.6	9.7
	У	-4.5	0	4.8	29.1



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Unit 1 - Section 2 (Calculator)

Once you have received your calculator, continue with the calculator section.





7. A machine packs boxes at a constant rate of $\frac{2}{3}$ of a box every $\frac{1}{2}$ minute.

What is the number of boxes per minute that the machine packs?

- $\mathbb{B} \quad \frac{3}{4}$
- © $1\frac{1}{6}$
- (b) $1\frac{1}{3}$
- **8.** A right triangle has legs measuring 4.5 meters and 1.5 meters.

The lengths of the legs of a second triangle are proportional to the lengths of the legs of the first triangle.

Which could be the lengths of the legs of the second triangle?

Select **each** correct pair of lengths.

- 8 m and 5 m
- © 7 m and 3.5 m
- 10 m and 2.5 m
- 11.25 m and 3.75 m

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SERIAL #



Rebecca and Megan are shopping at a store that sells jewelry, scarves, and purses. The cost of all the items at the store include tax.

9. Part A

Rebecca buys some scarves that cost 5 each and 2 purses that cost 12 each. The cost of Rebecca's total purchase is 39. What equation can be used to find *n*, the number of scarves that Rebecca buys?

- (A) 5 + 24n = 39
- (B) 5n + 24 = 39
- \odot (24 + 5)*n* = 39
- (b) $24 \cdot 5 + n = 39$

Part B

Megan buys 3 bracelets and 3 necklaces. Each bracelet costs \$5. Megan pays the clerk \$40 and gets \$4 change. What is the cost, in dollars, of one necklace?

Enter your answer in the box.



Use the information provided to answer Part A and Part B for question 10.

A teacher surveyed students in four classes to determine the location for a field trip. Each student chose only one location. The table shows the number of students from each class who chose each location.

Class	Number of Students Who Chose the Zoo	Number of Students Who Chose the Museum	Number of Students Who Chose the Planetarium
Class E	10	9	8
Class F	8	11	11
Class G	12	8	5
Class H	6	10	8

Field Trip Choices

10

SERIAL #

GO ON ►

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10. Part A

Determine the percent of students in each class who chose the museum. What is the order, from **least** to **greatest**, of the percents for each class?

- (A) Class E, Class F, Class G, Class H
- Class G, Class E, Class F, Class H
- © Class G, Class E, Class H, Class F
- Olass H, Class F, Class E, Class G

Part B

The total number of students who chose the zoo is how many times as great as the total number of students who chose the planetarium?

(A) 1 (B) $1\frac{1}{18}$ (C) $1\frac{1}{8}$ (D) $1\frac{1}{9}$

GO ON I



11. Chris made at least one error as she found the value of this expression.

 $2(-20) + 3\left[\frac{5}{4}(-20)\right] + 5\left[\frac{2}{5}(50)\right] + 4(50)$ Step 1: 2(-20) + 3(-25) + 5(20) + 4(50) Step 2: (3 + 2)(-20 + -25) + (5 + 4)(20 + 50) Step 3: 5(-45) + 9(70) Step 4: -225 + 630

Step 5: 405

Identify the step in which Chris made her first error. After identifying the step with the first error, write the corrected steps and find the final answer.

Enter the identified step, your work, and the final answer in the space provided.

12

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SERIAL #

Use the information provided to answer Part A and Part B for question 12.

Point *P* is plotted on the number line.







12. Part A

Point Q is the opposite of point P. Determine the location of point Q on the number line. Explain how you determined the location of point Q on the number line.

Enter your answer and your explanation in the space provided.

GO ON ►

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Part B

Point *S* is located at $\frac{5}{4}$ on the number line. A student claims that the location of point *S* is to the right of the location of point *P* on the number line.

- Explain whether the student's claim is correct or incorrect.
- Write an inequality that describes the relationship between the value of point *P* and the value of point *S*.

Enter your explanation and your inequality in the space provided.



15

SERIAL #

GO ON >

13. A scientist planted seeds in 4 sections of soil for an experiment. Not all of the seeds grew into plants. After 20 days, the scientist counted the number of plants in each of the 4 sections. The results are shown in the table.

Plant Experiment				
Section	Size of Section (square feet)	Number of Plants		
1	25	13		
2	100	38		
3	125	47		
4	150	62		

- Use the data in the table to determine approximately how many plants grew per square foot.
- Explain or show how you determined your approximation.
- Let y be the number of plants expected to grow in x square feet. Write an equation the scientist could use to model the relationship between y and x.

Enter your approximation, explanation, and equation in the space provided.



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