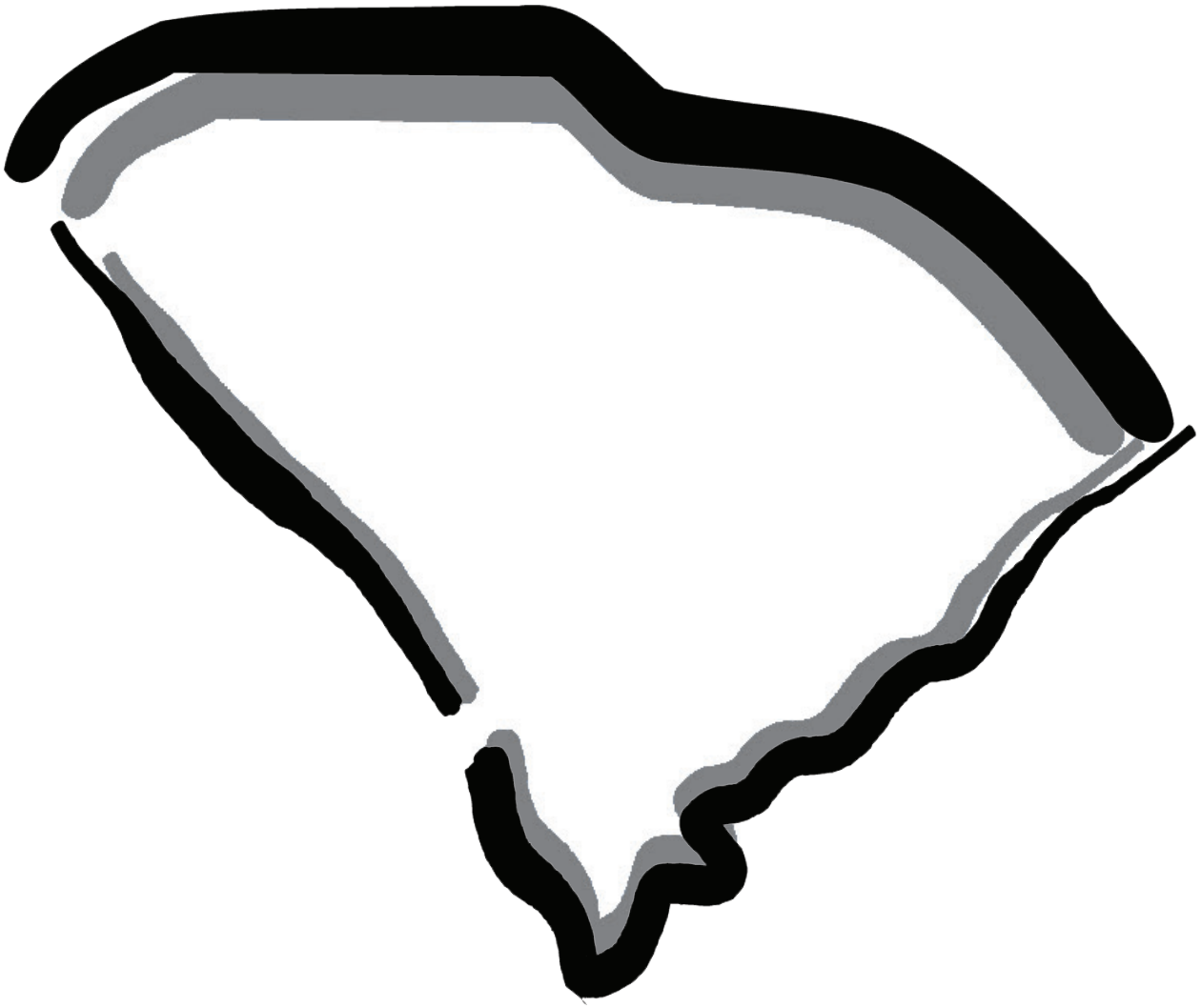
South Carolina SC READY 2018 Grade 7 Math Practice

Exam & Answer Key Materials Pages 2 - 23

SC READY

South Carolina College- and Career-Ready Assessments



Grade 7 Mathematics

SAMPLE ITEMS

Introduction

The South Carolina Department of Education provides districts and schools with tools to assist in delivering focused instruction aligned with the South Carolina College- and Career-Ready Standards (SCCCRS). This document contains a set of twenty SC READY test items that have been written to align with the South Carolina College- and Career-Ready Standards. These items were reviewed for content and bias prior to being field tested and approved for release to the public.

Purpose

This document is intended to be a resource for educators; it is not designed to be a practice test for students. The sample items are examples of college- and career-ready assessment items. These items were chosen to reflect the increased rigor of assessing the South Carolina College- and Career-Ready Standards which includes the Mathematical Process Standards. SC READY assesses content standards in a variety of ways. This document does not include all item types or standards. In addition, items are given a "calculator" or "no calculator" designation independent of standard alignment.

Item Information Format

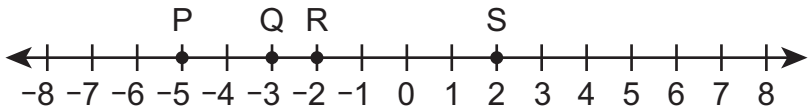
Calculator Usage	Calculator *or* No Calculator
Standard Alignment	SCCCR
Standard Description	text from SCCCR
Answer Key	correct answer
Depth of Knowledge	cognitive demand
Estimated Difficulty	estimate based on student responses

Links

South Carolina College- and Career-Ready Standards
https://ed.sc.gov/instruction/standards-learning/mathematics/standards/

Norman Webb's Depth-of-Knowledge for the Four Content Areas
http://www.webbalign.org/Webbs-DOK-Levels-Summary.pdf

1. The number line shows the locations of points P, Q, R, and S.



Which points have a distance of 5 units between them?

A. point P and point S

B. point Q and point R

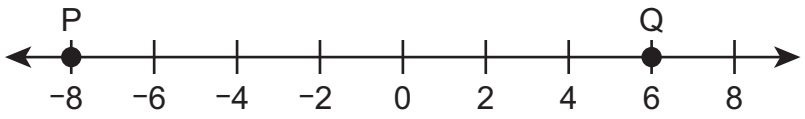
C. point Q and point S

D. point R and point S

SC READY MATH Sample Item 1

Calculator Usage	No Calculator
Standard Alignment	7.NS.1d
Standard Description	Extend prior knowledge of operations with positive rational numbers to add and to subtract all rational numbers and represent the sum or difference on a number line. Demonstrate that the distance between two rational numbers on the number line is the absolute value of their difference.
Answer Key	C
Depth of Knowledge	1
Estimated Difficulty	**Medium Difficulty**

2. Points P and Q are plotted on the number line.



Which expression represents the distance between points P and Q?

A. $|-8-(-6)|$

B. $|-8-6|$

C. $|8-6|$

D. $|6-8|$

SC READY MATH Sample Item		
2	**Calculator Usage**	No Calculator
	Standard Alignment	7.NS.1d
	Standard Description	Extend prior knowledge of operations with positive rational numbers to add and to subtract all rational numbers and represent the sum or difference on a number line. Demonstrate that the distance between two rational numbers on the number line is the absolute value of their difference.
	Answer Key	B
	Depth of Knowledge	1
	Estimated Difficulty	**Medium Difficulty**

3. What is the value of $\frac{1}{5}(6 + 8.5)$?

A. 2.9

B. 7.7

C. 9.7

D. 14.9

SC READY MATH Sample Item	3		
		Calculator Usage	No Calculator
		Standard Alignment	7.NS.2d
		Standard Description	Extend prior knowledge of operations with positive rational numbers to multiply and to divide all rational numbers. Apply mathematical properties (e.g., commutative, associative, distributive, or the properties of identity and inverse elements) to multiply and divide rational numbers.
		Answer Key	A
		Depth of Knowledge	1
		Estimated Difficulty	**High Difficulty**

4. Last year, Ted's salary was $42,000. He donated $\frac{1}{25}$ of last year's salary to charity. How much did Ted earn last year after his donation?

A. $31,500

B. $40,320

C. $43,680

D. $52,500

SC READY MATH Sample Item			
	4	**Calculator Usage**	Calculator
		Standard Alignment	7.NS.3
		Standard Description	Apply the concepts of all four operations with rational numbers to solve real-world and mathematical problems.
		Answer Key	B
		Depth of Knowledge	2
		Estimated Difficulty	**Medium Difficulty**

5. A grocery store charges $0.75 per donut. Which equation can be used to find c, the total cost, in dollars, to buy d donuts?

A. $c = 0.75 + d$

B. $c = 0.75d$

C. $d = 0.75 + c$

D. $d = 0.75c$

SC READY MATH Sample Item	5		
		Calculator Usage	Calculator
		Standard Alignment	7.RP.2d
		Standard Description	Identify and model proportional relationships given multiple representations, including tables, graphs, equations, diagrams, verbal descriptions, and real-world situations. Use equations to model proportional relationships.
		Answer Key	B
		Depth of Knowledge	2
		Estimated Difficulty	**Medium Difficulty**

6. Harrison reads 15 minutes per day for a project. The total number of minutes Harrison reads for the project is proportional to the number of days since he started the project. The equation shown represents the total number of minutes Harrison has read since he started the project.

$$y = 15x$$

What does x represent in the equation?

A. The number of days Harrison has read since he started the project.

B. The number of minutes Harrison reads per day for the project.

C. The total number of pages Harrison has read since he started the project.

D. The total number of minutes Harrison reads for a certain number of days for the project.

SC READY MATH Sample Item 6		
	Calculator Usage	No Calculator
	Standard Alignment	7.RP.2d
	Standard Description	Identify and model proportional relationships given multiple representations, including tables, graphs, equations, diagrams, verbal descriptions, and real-world situations. Use equations to model proportional relationships.
	Answer Key	A
	Depth of Knowledge	2
	Estimated Difficulty	**Medium Difficulty**

7. A community center is offering a discount on swimming passes. The regular cost for a swimming pass is $6.00. Jake, Liza, and Manuel each buy a swimming pass at the community center. After the discount, the total cost for the three passes is $14.40. What is the discount the community center is offering?

A. 20%

B. 42%

C. 71%

D. 80%

SC READY MATH Sample Item	7		
		Calculator Usage	Calculator
		Standard Alignment	7.RP.3
		Standard Description	Solve real-world and mathematical problems involving ratios and percentages using proportional reasoning (e.g., multi-step dimensional analysis, percent increase/decrease, tax).
		Answer Key	A
		Depth of Knowledge	2
		Estimated Difficulty	**High Difficulty**

8. Which expression is equivalent to $2.5(x - 1) + 4.5(-x - 2)$?

A. $-2x - 11.5$

B. $-2x + 11.5$

C. $7x - 11.5$

D. $7x + 11.5$

SC READY MATH Sample Item			
	8	**Calculator Usage**	Calculator
		Standard Alignment	7.EEI.1
		Standard Description	Apply mathematical properties (e.g., commutative, associative, distributive) to simplify and to factor linear algebraic expressions with rational coefficients.
		Answer Key	A
		Depth of Knowledge	1
		Estimated Difficulty	**High Difficulty**

9. Nell writes the expression $(3.6x + 6) – 4$. She rewrites the expression using the associative property. Which expression could Nell have written using the associative property?

A. $5.6x$

B. $9.6x – 4$

C. $3.6x + (6 – 4)$

D. $3.6(x + 6) – 4$

SC READY MATH Sample Item	9		
		Calculator Usage	No Calculator
		Standard Alignment	7.EEI.1
		Standard Description	Apply mathematical properties (e.g., commutative, associative, distributive) to simplify and to factor linear algebraic expressions with rational coefficients.
		Answer Key	C
		Depth of Knowledge	1
		Estimated Difficulty	**Medium Difficulty**

10. Which expression is equivalent to $-6x + 7.5$?

A. $-3(2x - 2.5)$

B. $-3(2x + 2.5)$

C. $-3(2x - 7.5)$

D. $-3(2x + 7.5)$

SC READY MATH Sample Item			
	10	**Calculator Usage**	Calculator
		Standard Alignment	7.EEI.1
		Standard Description	Apply mathematical properties (e.g., commutative, associative, distributive) to simplify and to factor linear algebraic expressions with rational coefficients.
		Answer Key	A
		Depth of Knowledge	1
		Estimated Difficulty	**High Difficulty**

11. Leon is buying a bicycle. The regular price of the bicycle is x dollars. The bicycle is on sale for 20% off. He has to pay 5% sales tax on the sale price of the bicycle.

To represent his total cost, Leon writes the expression shown.

$$1.05(x - 0.2x)$$

Which expression also represents Leon's total cost?

A. $0.79x$

B. $0.84x$

C. $0.85x$

D. $0.21x$

SC READY MATH Sample Item 11

Calculator Usage	No Calculator
Standard Alignment	7.EEI.2
Standard Description	Recognize that algebraic expressions may have a variety of equivalent forms and determine an appropriate form for a given real-world situation.
Answer Key	B
Depth of Knowledge	2
Estimated Difficulty	**High Difficulty**

12. Becker and Kayla are members of the school chess team. They record the number of games they each play for 10 days. The data are shown.

Becker: 5, 2, 4, 1, 1, 4, 5, 3, 2, 1
Kayla: 2, 3, 1, 1, 4, 1, 5, 3, 5, 5

Based on the data, which estimate represents the mean number of games chess team members play per day?

A. 1

B. 3

C. 4

D. 10

SC READY MATH Sample Item **12**

Calculator Usage	Calculator
Standard Alignment	7.DSP.4
Standard Description	Compare the numerical measures of center (mean, median, mode) and variability (range, interquartile range, mean absolute deviation) from two random samples to draw inferences about the populations.
Answer Key	B
Depth of Knowledge	2
Estimated Difficulty	**Medium Difficulty**

13. Emily and Tyson each surveyed 10 people in a community. The people were asked how many years they have lived in their current homes. The table shows the mean, median, and range for the data from each survey.

	Emily's Survey Results	Tyson's Survey Results
Mean	8.6 years	9.2 years
Median	12.5 years	10.5 years
Range	27.0 years	21.0 years

Based on the data, what conclusion can be made about the range number of years people in the community have lived in their current homes?

A. It is less than 20 years.

B. It is greater than 20 years.

C. It is exactly 24 years.

D. It cannot be determined.

SC READY MATH Sample Item

13

Calculator Usage	Calculator
Standard Alignment	7.DSP.4
Standard Description	Compare the numerical measures of center (mean, median, mode) and variability (range, interquartile range, mean absolute deviation) from two random samples to draw inferences about the populations.
Answer Key	B
Depth of Knowledge	2
Estimated Difficulty	**Medium Difficulty**

14. Antonio randomly surveyed 20 people at a bus stop on Friday morning and on Saturday morning. He asked how old each person was. The table shows the mean, median, and mode for the data Antonio collected on Friday and Saturday.

	Friday Morning	Saturday Morning
Mean	22.5	28.8
Median	18	22.5
Mode	16	18

Which conclusion could Antonio make about the ages of people that ride the bus?

A. Every person that rides the bus is older than the age of 16.

B. Every person that rides the bus is younger than the age of 29.

C. Most people that ride the bus are older than the age of 25.

D. Most people that ride the bus are younger than the age of 25.

SC READY MATH Sample Item

14

Calculator Usage	Calculator
Standard Alignment	7.DSP.4
Standard Description	Compare the numerical measures of center (mean, median, mode) and variability (range, interquartile range, mean absolute deviation) from two random samples to draw inferences about the populations.
Answer Key	D
Depth of Knowledge	3
Estimated Difficulty	**High Difficulty**

15. Aubrey is running for student council president. She estimates her chances of winning to be $\frac{1}{5}$ chance. Which likelihood describes Aubrey's estimated chances of winning?

A. impossible

B. unlikely

C. likely

D. certain

SC READY MATH Sample Item	15		
		Calculator Usage	No Calculator
		Standard Alignment	7.DSP.5
		Standard Description	Investigate the concept of probability of chance events.
		Answer Key	B
		Depth of Knowledge	1
		Estimated Difficulty	**Medium Difficulty**

16. Andrew records the color of each car that passes through an intersection. Based on his data, he determines it is neither likely nor unlikely that the next car passing through the intersection will be blue. Which value could be Andrew's estimate?

A. 0.01

B. $\frac{1}{2}$

C. 75%

D. 1

SC READY MATH Sample Item 16

Calculator Usage	Calculator
Standard Alignment	7.DSP.5
Standard Description	Investigate the concept of probability of chance events.
Answer Key	B
Depth of Knowledge	1
Estimated Difficulty	**Medium Difficulty**

17. Denise makes a scale model of a train for a science fair project. The actual train has a length of 80 feet. Denise's scale model of the train has a length of 5 feet. The diameter of the largest wheel on the actual train is 60 inches.

Using the same scale, what is the diameter, in inches, of the largest wheel on Denise's scale model?

A. 3.75

B. 5.75

C. 16

D. 44

SC READY MATH Sample Item 17

Calculator Usage	Calculator
Standard Alignment	7.GM.1
Standard Description	Determine the scale factor and translate between scale models and actual measurements (e.g., lengths, area) of real-world objects and geometric figures using proportional reasoning.
Answer Key	A
Depth of Knowledge	2
Estimated Difficulty	**High Difficulty**

18. Tilda makes a scale model of the *Titanic*.

- The actual *Titanic* was 175 feet tall.
- Tilda's model is 35 inches tall.

What is the scale factor comparing Tilda's model to the actual *Titanic*?

A. 1 inch : 5 feet

B. 1 inch : 35 feet

C. 12 inches : 3 feet

D. 12 inches : 36 foot

SC READY MATH Sample Item 18

Calculator Usage	Calculator
Standard Alignment	7.GM.1
Standard Description	Determine the scale factor and translate between scale models and actual measurements (e.g., lengths, area) of real-world objects and geometric figures using proportional reasoning.
Answer Key	A
Depth of Knowledge	1
Estimated Difficulty	**Medium Difficulty**

19. Kimberly cuts a piece of aluminum foil to fit in the bottom of a circular baking pan. The bottom of the pan has a circumference of 10π inches. What is the area, in square inches, of the piece of aluminum foil Kimberly cuts?

A. 5π

B. 10π

C. 25π

D. 100π

SC READY MATH Sample Item

19

Calculator Usage	Calculator
Standard Alignment	7.GM.4d
Standard Description	Investigate the concept of circles. Use the formulas for circumference and area of circles appropriately to solve real-world and mathematical problems.
Answer Key	C
Depth of Knowledge	3
Estimated Difficulty	**High Difficulty**

20. A circle has a diameter of 22 inches. What is the area, in square inches, of the circle?

A. 22π

B. 44π

C. 121π

D. 484π

SC READY MATH Sample Item			
20	**Calculator Usage**	Calculator
	Standard Alignment	7.GM.4d
	Standard Description	Investigate the concept of circles. Use the formulas for circumference and area of circles appropriately to solve real-world and mathematical problems.
	Answer Key	C
	Depth of Knowledge	2
	Estimated Difficulty	**High Difficulty**