

Student Name:

CASE | Benchmark
Assessments™

2021-2022

Grade 7 Math

Benchmark 3

Cabarrus County School District
North Carolina

Spring 2022



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CALCULATOR INACTIVE

The items in this test are based on the North Carolina Standard Course of Study for Mathematics.

DIRECTIONS FOR THE CALCULATOR INACTIVE SECTION OF THE TEST:

- Calculators may not be used during this test.
- Read each problem carefully.
- Choose the best answer from the choices given.
- Fractions in some answer choices may have been simplified. Check each answer choice to see if this has been done.
- Diagrams used in the test may not be drawn to scale.
- Stop when you see the words "STOP. END OF CALCULATOR INACTIVE SECTION."
- When you have completed the calculator inactive questions, read and follow the directions at the end of this section of the test.



1. Which term describes $-\frac{7}{9}$?

- A natural number
- B positive number
- C rational number
- D whole number

2. Which expression is equivalent to $22y + 11$?

- A $11(2y)$
- B $11(2y + 1)$
- C $11(2y + 11)$
- D $11(11y)$

3. Six friends buy candy at a candy store. The expression $\frac{-27}{6}$ represents the amount of money each friend spends on candy.

Which expression is equivalent to $\frac{-27}{6}$?

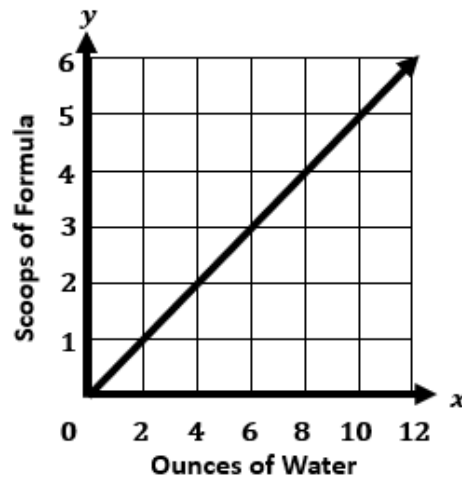
- A $-\left(\frac{27}{-6}\right)$
- B $-\left(\frac{-27}{6}\right)$
- C $\frac{-27}{-6}$
- D $\frac{27}{-6}$

4. Which statement is true?

- A A probability of -2 indicates an event will definitely happen.
- B A probability of $\frac{1}{2}$ indicates an event is neither likely nor unlikely to happen.
- C A probability of $\frac{9}{10}$ indicates an event is unlikely to happen.
- D A probability of 1 indicates an event will definitely not happen.



5. The graph shows the relationship between the number of scoops of formula, y , and the ounces of water, x , in a baby formula recipe.



Which coordinate pair represents that the recipe requires 3 scoops of formula for every 6 ounces of water?

- A (2, 4)
B (3, 6)
C (6, 3)
D (8, 4)
6. A college student earns \$15,000 working part time at a bookstore. The student pays $\frac{1}{10}$ of the earnings in taxes, spends $\frac{2}{5}$ of the earnings on living expenses, and saves the remainder of the earnings.

How much money does the student save?

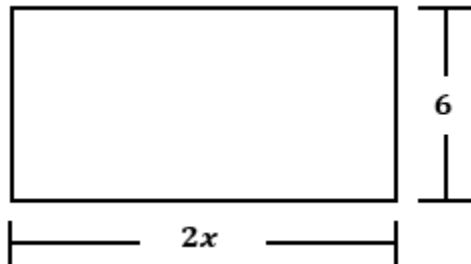
- A \$1,500
B \$6,000
C \$7,500
D \$10,500



7. Which expression is equivalent to $(20x + 5.5) + (-34x - 2.5)$?

- A $14x + 3$
- B $14x - 3$
- C $-14x + 3$
- D $-14x - 3$

8. Consider the rectangle.



Which pair of expressions represents the area of the rectangle?

- A $2(2x) + 2(6)$ and $4x + 8$
- B $2(2x) + 2(6)$ and $4x + 12$
- C $8x$ and $6(2x)$
- D $12x$ and $6(2x)$



DIRECTIONS FOR THE CALCULATOR INACTIVE, GRIDDED RESPONSE SECTION OF THE TEST:

- Questions 9 through 12 require you to write your answers in the boxes provided on the back of your answer document.
- Write only the number or symbol in each box, and fill in the circle in each column that matches what you have printed.
- Fill in only 1 circle in each column.

9. What is the value of $\frac{1}{4} - 41\frac{1}{4} + 3$?

10. Consider the expression.

$$\frac{6}{-3} + 5.2 \left(-3\frac{1}{4} \right)$$

What is the value of the expression?



11. The table shows the total dollar amounts an employee earns for different numbers of hours worked.

Hours, x	Total Earnings, y
3	\$64.50
5	\$107.50
7	\$150.50
9	\$193.50

What is the constant of proportionality that relates y , the total amount the employee earns in dollars, to x , the number of hours the employee works?

12. What is the decimal equivalent of $-\frac{1}{2}$?



END OF CALCULATOR INACTIVE SECTION

DIRECTIONS:

- Look back over your answers for the calculator inactive questions. You will *not* be able to go back and work on these questions once you are given a calculator.
- Raise your hand to let your teacher know you are ready to begin the calculator active questions.
- Do not begin work on the calculator active test questions until your teacher has given you a calculator.
- Keep your answer document on the gridded response side.
- When your teacher has given you a calculator, **GO TO THE NEXT PAGE**, and **BEGIN** the calculator active, gridded response questions.
- Stop when you see the words “**END OF GRIDDED RESPONSE SECTION.**”

**DIRECTIONS FOR THE CALCULATOR ACTIVE, GRIDDED RESPONSE SECTION OF THE TEST:**

- Questions 13 through 16 require you to write your answers in the boxes provided on the back of your answer document.
 - Write only the number or symbol in each box, and fill in the circle in each column that matches what you have printed.
 - Fill in only 1 circle in each column.
13. A gallery planner creates a scale model of a gallery with a scale of 2 inches = 7 feet. If the scale model of the gallery measures 24 inches long, how many feet long is the actual gallery?
14. What is the value of x in the equation $2(x + 3.5) = -10$?
15. Angles S and T are vertical angles. If angle S has a measure of $(x - 2)^\circ$, and angle T has a measure of 40° , what is the value of x ?
16. A designer makes 4 pairs of pants, 8 shirts, and 3 pairs of shoes for a new collection. If an outfit consists of a shirt, a pair of pants, and a pair of shoes, how many different outfits can the designer put together?

END OF GRIDDED RESPONSE SECTION**DIRECTIONS:**

- Look back over your answers for the calculator active gridded response questions.
- Turn your answer document over to the multiple choice side.
- Then, GO TO THE NEXT PAGE, and BEGIN the calculator active, multiple choice questions.
- Stop when you see the words "STOP. END OF MATH TEST."



17. A bag contains 16 blue marbles, 23 green marbles, and 13 red marbles. There are a total of 52 marbles in the bag.

If a marble is randomly selected from the bag, what is the probability that the marble is red?

- A 0.13
- B 0.25
- C 0.30
- D 0.44

18. The table shows two linear expressions.

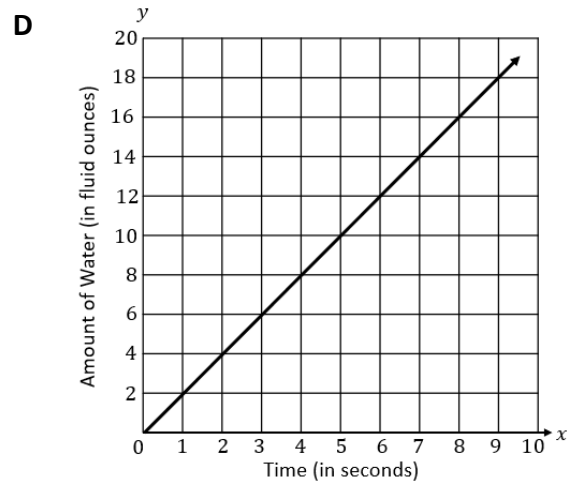
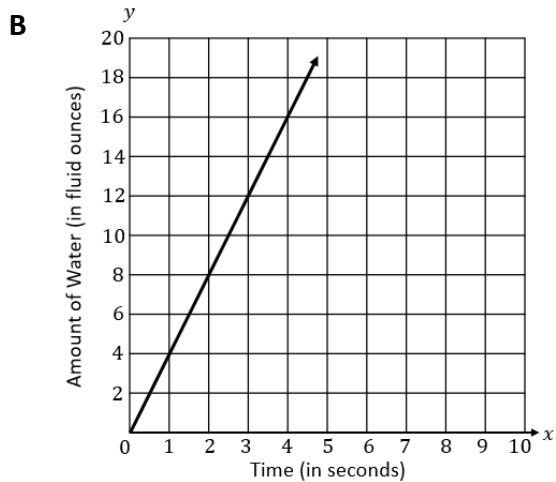
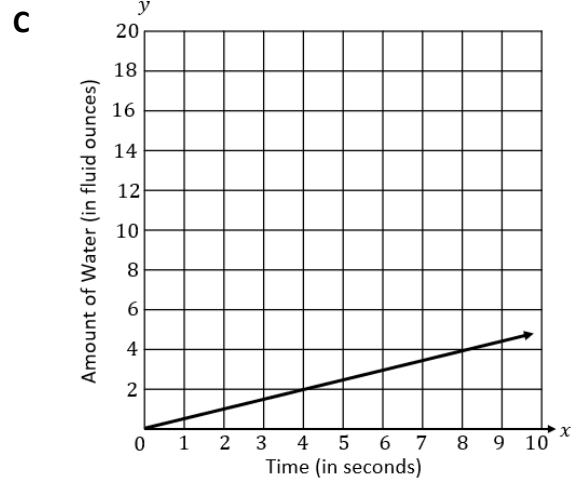
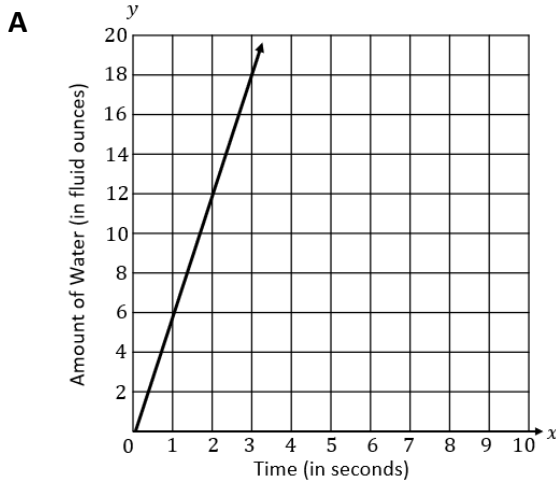
Expression 1	$-6.4x + 1.4$
Expression 2	$3x - 1$

Which expression is the result of Expression 2 being subtracted from Expression 1?

- A $-9.4x + 0.4$
- B $-9.4x + 2.4$
- C $-3.4x + 0.4$
- D $-3.4x + 2.4$



19. An empty water bottle is filled with water at a constant rate, and after 3 seconds, there are 6 fluid ounces of water in the water bottle. Which graph *best* represents the proportional relationship between the amount of water in the water bottle, y , and the time, x , in seconds?



20. A student begins an assignment with q questions. The student answers 15% of the questions on Monday and 30% of the questions on Tuesday.

If the expression $q - 0.15q - 0.30q$ represents the number of questions the student has left to answer, which expression also represents the number of questions the student has left to answer?

- A $q + 0.45q$
- B $q - 0.55q$
- C $0.45q$
- D $0.55q$



Use the information given to answer questions 21-22.

A hardware store sells bolts, nails, and screws in packages. The table shows the prices for the package types.

Package Type	Price
bolts	\$11.50
nails	\$5.10
screws	?

21. Which statement is true?

- A The expression $11.50 + 5.10$ represents that the cost of 3 packages of bolts and 2 packages of nails is \$16.60.
- B The expression $11.50 + 5.10$ represents that the cost of 3 packages of bolts and 2 packages of nails is \$44.70.
- C The expression $(11.50 \times 3) + (5.10 \times 2)$ represents that the cost of 3 packages of bolts and 2 packages of nails is \$16.60.
- D The expression $(11.50 \times 3) + (5.10 \times 2)$ represents that the cost of 3 packages of bolts and 2 packages of nails is \$44.70.

22. A customer buys 6 packages of nails and 7 packages of screws for \$74.35. What is the price of a package of screws?

- A \$0.76
- B \$5.35
- C \$6.25
- D \$43.75



23. Consider the information about the number of customers that select various frame colors at a frame store one day.
- 15 customers select white frames.
 - 30 customers select black frames.
 - 45 customers select gold frames.
- If there are a total of 2,200 customers that order from the frame store one month, what is the *best approximation* for how many customers that month select a black frame?
- A 367 customers
- B 733 customers
- C 1,100 customers
- D 1,467 customers
24. A student completes $\frac{2}{5}$ of a science project in $\frac{3}{4}$ hour. At this rate, what fraction of the project can the student complete per hour?
- A $\frac{3}{10}$
- B $\frac{8}{15}$
- C $1\frac{7}{8}$
- D $3\frac{1}{3}$
25. There are 2 squares, 2 triangles, 2 hexagons, and 2 circles in a teacher's bag of shapes. If a student randomly selects 1 shape from the bag, what is the probability that the student selects a circle?
- A 0.75
- B 0.5
- C 0.25
- D 0.2



26. A cereal company runs a promotion that includes a special prize in 20% of the cereal boxes produced. A statistics class wants to design a simulation to *approximate* the probability of finding *exactly* 1 special prize when buying 3 of the company's cereal boxes. For the simulation, the class creates a spinner divided into 5 equal-sized sections and labels each section either "Prize" or "No Prize."

How many sections of the spinner should the class label "No Prize"?

- A 1 section
- B 2 sections
- C 3 sections
- D 4 sections
27. The equation $y = 36x$ represents the total cost, y , in dollars, to hire Lavish Landscaping for x hours of work. The table represents the cost to hire Landscape Designs.

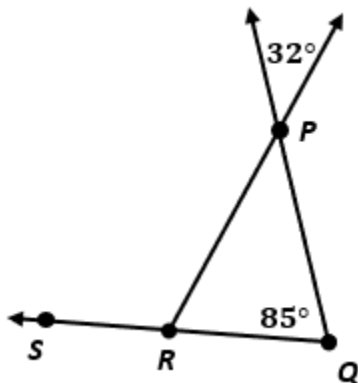
Landscape Designs	
Number of Hours	Total Cost (\$)
3	144
4	192
5	240
6	288

Which statement is true?

- A Landscape Designs costs \$12 per hour less than Lavish Landscaping.
- B Landscape Designs costs \$108 per hour less than Lavish Landscaping.
- C Lavish Landscaping costs \$12 per hour less than Landscape Designs.
- D Lavish Landscaping costs \$108 per hour less than Landscape Designs.
28. A swimsuit is on sale for \$29.75. If the original price of the swimsuit is \$35, what is the percent of the discount?
- A 2%
- B 5%
- C 15%
- D 17%



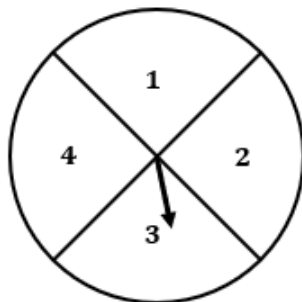
29. Consider the figure comprised of three rays.



What is the measure of angle RPQ ?

- A 32°
- B 63°
- C 117°
- D 148°

30. A spinner is divided into 4 equal sections.



If a student spins the spinner 2 times, what is the probability that the spinner lands in the section labeled with a 3 both times?

- A $\frac{1}{3}$
- B $\frac{1}{4}$
- C $\frac{1}{9}$
- D $\frac{1}{16}$



31. A kitten gains 40% of its birth weight in the first week. Which expressions represent the kitten's weight after one week when the kitten's birth weight is p pounds?

- A $1.4p$ and $p + 0.4p$
- B $1.4p$ and $p + 1.4p$
- C $0.04p$ and $1 + 0.4p$
- D $1.04p$ and $p + 1.04p$

32. An employee earns \$300 per week working at a banana stand. For each banana that the employee sells, the employee earns an additional \$0.50. This week, the employee wants to earn more than \$650.

Which inequality represents the possible number of bananas, x , the employee needs to sell to meet the goal?

- A $0.50x + 300 > 650$, where $x > 700$
- B $0.50x + 300 < 650$, where $x < 700$
- C $300x + 0.50 > 650$, where $x > 1,900$
- D $300x + 0.50 < 650$, where $x < 1,900$

33. Consider the two expressions.

Expression 1	$-6(9x + 2) - 7.5$
Expression 2	$-54x + p$

What value of p will make the two expressions equivalent?

- A -19.5
- B -7.5
- C -5.5
- D -4.5

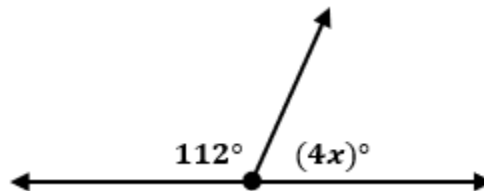


34. A customer must choose a color of wrapping paper and gift box type for gift wrapping at a store. The table shows the customer's options.

Wrapping Paper Color	Gift Box Type
red (R)	regular (G)
silver (S)	premium (P)
yellow (Y)	

Which list shows the complete sample space of choosing a wrapping paper color and gift box for the gift?

- A GR, GS, GP, GY
 B PG, PR, PS, PY
 C RG, RP, RS, SG, SP, YG, YP, YR, YS
 D RG, RP, SG, SP, YG, YP
35. The angles in the diagram are supplementary.



What is the value of x ?

- A 17
 B 23
 C 45
 D 68
36. The total cost to install a fence around the perimeter of a square garden is given by the expression $32t$, where t is the side length of the garden, in feet. Which statement is true?
- A The expression $8t + 4$ is equivalent to $32t$, and the per foot installation cost is \$4.
 B The expression $8(4t)$ is equivalent to $32t$, and the per foot installation cost is \$8.
 C The expression $4(8t)$ is equivalent to $32t$, and the per foot installation cost is \$4.
 D The expression $8 + 4t$ is equivalent to $32t$, and the per foot installation cost is \$8.



37. A salesperson rents a car for a work trip. The rental car company charges the salesperson \$25 each day and a flat fee of \$100 for insurance.

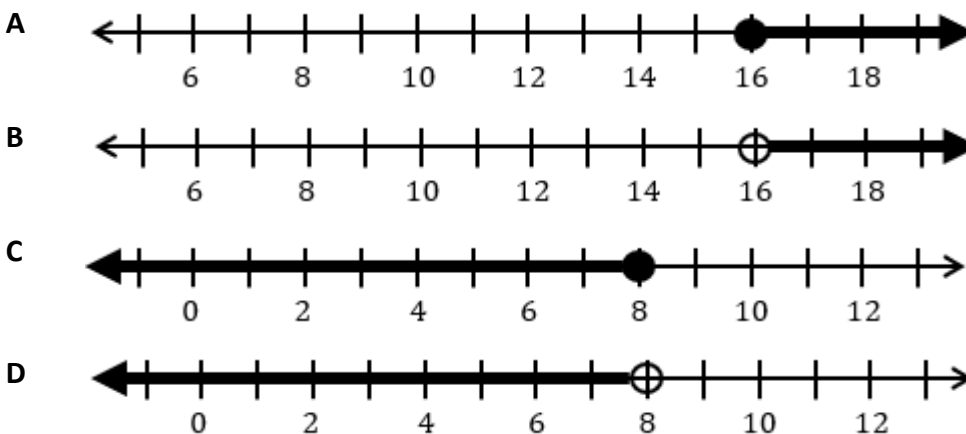
If the salesperson is charged a total of \$225 to rent the car for x days, which statement is true?

- A The equation $25x + 100 = 225$ can be used to find x , and the salesperson rents the car for exactly 2 days.
- B The equation $25x + 100 = 225$ can be used to find x , and the salesperson rents the car for exactly 5 days.
- C The equation $100x + 25 = 225$ can be used to find x , and the salesperson rents the car for exactly 2 days.
- D The equation $100x + 25 = 225$ can be used to find x , and the salesperson rents the car for exactly 5 days.
38. A student earns \$320 at a summer job. The student saves 20% of the money and then invests $\frac{1}{8}$ of the remaining money in the stock market.

How much money does the student invest in the stock market?

- A \$8
- B \$32
- C \$64
- D \$256

39. Which graph *correctly* displays the solutions to the inequality $7x + 28 < 84$?





40. The table shows the values of complementary angles Q and P .

Angle	Value
Q	$(x + 2)^\circ$
P	$(3x)^\circ$

Which statement is true?

- A An equation to find the value of x is $x + 2 + 3x = 180$, and the measure of angle Q is 46.5° .
- B An equation to find the value of x is $x + 2 + 3x = 180$, and the measure of angle Q is 44.5° .
- C An equation to find the value of x is $x + 2 + 3x = 90$, and the measure of angle Q is 24° .
- D An equation to find the value of x is $x + 2 + 3x = 90$, and the measure of angle Q is 22° .

