

# RELEASED ITEMS 

## MATHEMATICS GRADE 8

## Fall 2008

1 Add, subtract, multiply \& divide rational numbers
A made positive fraction negative, then added
B additive inverse of solution
C correct
D made negative fraction positive, then added

2 What is the value of the expression below?

$$
6 \times(-2) \div-3
$$

A -9
B -4
C $\quad 1$
D 4

3 Estimate results of computations with rationals
A underestimate
B underestimate
C correct
D overestimate

4 Which is closest to the value of the following expression?

$$
-\frac{1}{6}+\frac{4}{3}+\left(\frac{1}{2}-\frac{5}{6}\right)+\frac{7}{2}
$$

A 6
B 5
C 4
D 3

5 Use ruler, other tools to draw polygons
A incorrect measurement
B incorrect measurement
C incorrect measurement
D correct

6 Which of the following appears to be a triangle with sides that each measure $3 \frac{1}{2}$ centimeters?

A $\Delta$

B


C


D $\triangle$

7 Show linear relats. w/ tables, graphs, formulas
A correct
B reciprocal of slope, incorrect y-intercept
C additive inverse of slope, correct y-intercept
D additive inverse of reciprocal of slope, incorrect y-int

8 Which equation shows the relationship between values of $x$ and $y$ in the table below?

| $x$ | $y$ |
| :---: | :---: |
| -3 | 4 |
| -1 | $\frac{4}{3}$ |
| 1 | $-\frac{4}{3}$ |
| 3 | -4 |

A $y=\frac{-4}{3} x$

B $\quad y=x+7$

C $\quad y=x-7$

D $y=\frac{4}{3} x$

9 In which table does the data represent a linear relationship between $x$ and $y$ ?
A

| $\boldsymbol{x}$ | $\boldsymbol{y}$ |
| ---: | ---: |
| -2 | 1 |
| -1 | 3 |
| 0 | 7 |
| 1 | 15 |

B

| $x$ | $y$ |
| :---: | :---: |
| 0 | 0 |
| 1 | 2 |
| 2 | 4 |
| 3 | 9 |

C

| $x$ | $y$ |
| :---: | :---: |
| 0 | 0 |
| 1 | 2 |
| 2 | 4 |
| 3 | 6 |

D

| $x$ | $y$ |
| ---: | ---: |
| -2 | 1 |
| 0 | 2 |
| 1 | 3 |
| 2 | 4 |

10 Which equation best represents the graph on the coordinate plane shown below?


A $y=\frac{x}{2}$

B $\quad y=-4 x+2$

C $y=x$

D $y=\frac{1}{x}$

## PART 2

## DIRECTIONS

You will now begin Part 2 of this test. You may use a calculator on this part of the test, and you may use open space in this test booklet for scratch paper. No additional paper may be used.

This part of the test has both multiple-choice questions and a constructed-response question.
Multiple-choice questions will require you to choose the best answer from among four answer choices.

- Use only a No. 2 pencil to mark your answer in your Answer Document.
- If you erase an answer, be sure to erase it completely.
- If you skip a question, be sure to mark the answer to the next question in the correct place in your Answer Document.


## Sample Multiple-Choice Question:

Marty wants to put 75 CDs into cases. Each case holds exactly 8 CDs . What is the least number of cases that Marty will need to hold all his CDs?

A 8
B 9
C 10
D 11
For this sample question, the correct answer is $\mathbf{C}$. Circle $\mathbf{C}$ is filled in on the sample question in your Answer Document.

You will have at least 50 minutes to finish Part 2 of this test. You will be given additional time if needed.

Once you have reached the word STOP in your test booklet, do NOT go on to the next page. If you finish early, you may check your work in Part 2 of the test ONLY. Do NOT look at questions in Part 1 of the test.

11 Calculate rates of change, including speed
A too fast
B reciprocal
C correct
D too slow

12 While taking Gina's pulse rate on her wrist, Jeff counted 9 beats in 10 seconds. Which best represents Gina's pulse rate?

A $\quad 9$ beats per minute
B 54 beats per minute
C $\quad 90$ beats per minute
D 540 beats per minute

13 Convert ratio quantities between systems of units
A used reciprocals of conversion ratios
B incorrect conversion
C incorrect conversion
D correct

14 Raul rides his bicycle at a rate of 8 inches per second. What is the rate in feet per minute?

$$
\begin{gathered}
\text { (1 foot }=12 \text { inches }) \\
\text { (1 minute }=60 \text { seconds })
\end{gathered}
$$

A $\quad 7.5$
B $\quad 40.0$
C $\quad 96.0$
D 480.0

15 Solve proportion problems
A incorrect proportion
B incorrect proportion
C correct
D incorrect proportion

16 What value of $x$ makes the equation below true?

$$
\frac{x}{4}=\frac{6}{48}
$$

A 0.50
B 0.03
C 2
D 3

17 Understand the concept of square root and cube root
A correct
B square root means divide by 4
C square root means divide by 3
D square root means divide by 2

18 Which is closest to the square root of 11 ?
A 3
B 6
C 44
D $\quad 121$

19 Solve problems involving operations with integers
A additive inverse
B added, instead of subtracted
C additive inverse of adding
D correct

A scientist was tracking a whale. At noon, the whale was 5 feet below the surface of a body of water. The following are the whale's movements over the next several hours.

- Dove down 3 more feet
- Rose up 8 feet
- Dove down 15 feet
- Rose up 3 feet

After all of the movements described above, which statement best describes the position of the whale in relation to the surface of the water?

A 12 feet above the surface of the water
B 2 feet below the surface of the water
C 2 feet above the surface of the water
D 12 feet below the surface of the water

21 Know properties of similar figures and scale factor
A incorrect conclusion about side lengths
B incorrect conclusion about side lengths
C incorrect conclusion about angle measures
D correct

22 Rectangle $A B C D$ is similar to rectangle EFGH.


What is the scale factor from rectangle ABCD to rectangle EFGH?
A 1.5
B 2.5
C $\quad 5.0$
D 19.0

23 Solve problems of similar figures, scale drawings
A incorrect length
B incorrect length
C correct
D incorrect length

24 A scale drawing of a house uses 0.5 inch to represent 3 feet. If the floor of a room in the house is 24 feet long, what is its length in the drawing?

A 48 inches
B 12 inches
C 8 inches
D 4 inches

25 Show similarity of triangles using properties
A incorrect conclusion about angles
B incorrect conclusion about angles
C incorrect conclusion about side lengths
D correct

26 If $\triangle L M N$ is similar to $\triangle X Y Z$, which of the following must be true?

A $\frac{L M}{X Y}=\frac{M N}{Y Z}=\frac{N L}{Z X}$

B $\frac{L M}{X Y}=\frac{M N}{Z X}=\frac{N L}{Y Z}$
c $\quad \frac{\mathrm{LM}}{X Y}>\frac{M N}{Y Z}$ and $\mathrm{m} \angle \mathrm{L}=\mathrm{m} \angle \mathrm{X}$

D $\frac{L M}{X Y}>\frac{N L}{Z X}$ and $m \angle M>m \angle Y$

27 Use similarity of triangles and scale factor
A did not apply scale factor
B divided area by scale factor
C multiplied area by scale factor
D correct

28 Triangles $A B C$ and DEF are similar. The length of each side of triangle $A B C$ is 8 times the length of each corresponding side of triangle DEF. How many times greater is the area of triangle $A B C$ than the area of triangle DEF?

A 4
B 8
C 16
D 64

29 Create, select, interpret graphical representations
A percent $=$ count
B correct
C incorrect count
D added 100 to percent given in circle graph

30 The histogram below represents the total points scored by the players during a basketball tournament.

Points Scored


According to the graph, what number of players scored in the interval of 100 to 119 points?
A 6
B 18
C 19
D 24

31 Create, select, interpret graphical representations
A complement of solution in D
B complement of relative frequency
C correct
D less than or equal to, instead of less than

32 A survey was given to 250 women. Each woman was asked how many children she had. The results showed that 0.28 of the women had 3 or more children. How many of the women surveyed had fewer than 3 children?

A 28
B $\quad 70$
C $\quad 72$
D 180

33 Find, interpret the median, quartiles, and IQR

A minimum
B correct
C mean
D middle number of unordered list

34 The range of a set of numbers is 28 . The number with the greatest value in the set is 114 . What is the number with the least value in the set of numbers?

A 43
B 57
C 71
D 86

35 Solve applied linear problems w/ graphs, equations

A correct
B incorrect y-intercept, incorrect slope
C incorrect y-intercept, correct slope
D incorrect y-intercept, incorrect slope

36 Michael cycled at a constant speed of 20 miles per hour. Which graph best shows the relationship between the number of miles he traveled and the number of hours he cycled?

A


B Michael Cycling


C Michael Cycling


D Michael Cycling


37 Understand \& use basic properties of real numbers
A distributive property
B multiplicative identity
C associative property
D correct

38 Which is equivalent to the following expression?

$$
7(x+4)
$$

A $7 x+28$
B $28 x$
C $\quad x+11$
D $7 x+4$

39 Compute simple linear algebraic expressions
A correct
B $a(b x-c y)=a b x-c y$
C $\quad a(b x-c y)=(a b-c) x y$
D $a(b x-c y)=a(b-c) x y$

40 Which is equivalent to the expression below?

$$
8 x-2 y+4 y
$$

A $\quad 8 x-2 y$
B $\quad 8 x+2 y$
C $10 x+y$
D $10 x y$

41 Which ordered pair represents the point where the graph of the following equation intersects the $x$-axis?

$$
y=5 x-10
$$

A $(0,-10)$
B $(0,10)$
C $(-2,0)$
D $(2,0)$

42 Claire needs a total of $\$ 24$ to pay for a school field trip. She has saved $\$ 9$. She is selling ribbons for $\$ 0.75$ to raise the rest of the money she needs. What is the least number of ribbons Claire must sell to raise the money she still needs?

A 12
B 20
C 32
D 44

43 In addition to a one-time $\$ 4.00$ membership fee, a video store charges $\$ 1.00$ for every video rented. Which graph below best represents this situation?

A


B


C

D

Number of Videos

44 For the following equation, what is the value of $y$ when $x=18$ ?

$$
y=\frac{1}{6} x
$$

A $\frac{1}{3}$

B 3

C $\frac{1}{108}$

D 108

45 Which appears to be the slope of the line graphed below?


A $\frac{1}{3}$
B $\frac{2}{3}$
C $\frac{3}{2}$
D $\frac{3}{1}$

46 Which equation represents the data in the following table?

| $\boldsymbol{x} \boldsymbol{x}$ | $\boldsymbol{y}$ |
| ---: | ---: |
| 0 | 2 |
| 4 | -1 |
| 8 | -4 |
| 12 | -7 |

A $y=\frac{-3}{4} x$

B $\quad y=\frac{-4}{3} x$
c $y=\frac{-3}{4} x+2$

D $\quad y=\frac{-4}{3} x+2$

47 A lawn mowing company contracts to mow 60 lawns per day. Currently the company employs 6 people to mow lawns but will double the number of employees. If each current and new employee mows the same number of lawns per day, how many would they each mow?

A 5
B 6
C 10
D 12

The scatterplot below shows some students' science and math test scores.

Test Scores


Which equation would most accurately represent the line of best fit for this set of data?

A $y=\frac{2}{3} x+30$

B $\quad y=\frac{1}{2} x+70$

C $y=\frac{-2}{3} x+70$

D $y=\frac{-1}{2} x+10$

49 A bus used 23 gallons of gasoline to travel a distance of 207 miles. Which is closest to the number of miles the bus traveled for each gallon of gasoline?

A 9
B 184
C 230
D 4,761

Scoring Key: Part 1

| Item <br> No. | Correct <br> Answer | GLCE | Type | Description |
| ---: | :---: | :---: | :--- | :--- |
| 1 | C | N.FL.07.08 | Core | Add, subtract, multiply \& divide rational numbers |
| 2 | D | N.FL.07.08 | Core | Add, subtract, multiply \& divide rational numbers |
| 3 | C | N.FL.07.09 | Core | Estimate results of computations with rationals |
| 4 | C | N.FL.07.09 | Core | Estimate results of computations with rationals |
| 5 | D | G.SR.07.01 | Core | Use ruler, other tools to draw polygons |
| 6 | B | G.SR.07.01 | Core | Use ruler, other tools to draw polygons |
| 7 | A | A.RP.07.02 | Core | Show linear relats. w/ tables, graphs, formulas |
| 8 | A | A.RP.07.02 | Core | Show linear relats. w/ tables, graphs, formulas |
| 9 | C | A.PA.07.01 | Future | Recognize proportional or linear relationships |
| 10 | D | A.RP.07.10 | Future | Know properties of the graph of $\mathrm{y}=\mathrm{k} / \mathrm{x}$ |

Scoring Key: Part 2

| Item <br> No. | Correct <br> Answer | GLCE | Type | Description |
| ---: | :---: | :--- | :--- | :--- |
| 11 | C | N.FL.07.03 | Core | Calculate rates of change, including speed |
| 12 | B | N.FL.07.03 | Core | Calculate rates of change, including speed |
| 13 | D | N.MR.07.04 | Core | Convert ratio quantities between systems of units |
| 14 | B | N.MR.07.04 | Core | Convert ratio quantities between systems of units |
| 15 | C | N.FL.07.05 | Core | Solve proportion problems |
| 16 | A | N.FL.07.05 | Core | Solve proportion problems |
| 17 | A | N.MR.07.06 | Core | Understand the concept of square root and cube <br> root |
| 18 | A | N.MR.07.06 | Core | Understand the concept of square root and cube <br> root |
| 19 | D | N.FL.07.07 | Core | Solve problems involving operations with integers |
| 20 | D | N.FL.07.07 | Core | Solve problems involving operations with integers |
| 21 | D | G.TR.07.03 | Core | Know properties of similar figures and scale <br> factor. |
| 22 | B | G.TR.07.03 | Core | Know properties of similar figures and scale <br> factor. |
| 23 | C | G.TR.07.04 | Core | Solve problems of similar figures, scale drawings |
| 24 | D | G.TR.07.04 | Core | Solve problems of similar figures, scale drawings |
| 25 | D | G.TR.07.05 | Core | Show similarity of triangles using properties |
| 26 | A | G.TR.07.05 | Core | Show similarity of triangles using properties |
| 27 | D | G.TR.07.06 | Core | Use similarity of triangles and scale factor |
| 28 | D | G.TR.07.06 | Core | Use similarity of triangles and scale factor |
| 29 | B | D.RE.07.01 | Core | Create, select, interpret graphical representations |
| 30 | D | D.RE.07.01 | Core | Create, select, interpret graphical representations |
| 31 | C | D.AN.07.03 | Core | Interpret relative \& cumulative frequencies |
| 32 | D | D.AN.07.03 | Core | Interpret relative \& cumulative frequencies |
| 33 | B | D.AN.07.04 | Core | Find, interpret the median, quartiles, and IQR |

Scoring Key: Part 2

| 34 | D | D.AN.07.04 | Core | Find, interpret the median, quartiles, and IQR |
| ---: | :---: | :---: | :---: | :--- |
| 35 | A | A.PA.07.04 | Core | Solve applied linear problems w/ graphs, <br> equations |
| 36 | D | A.PA.07.04 | Core | Solve applied linear problems w/ graphs, <br> equations |
| 37 | D | A.PA.07.11 | Core | Understand \& use basic properties of real <br> numbers |
| 38 | A | A.PA.07.11 | Core | Understand \& use basic properties of real <br> numbers |
| 39 | A | A.FO.07.12 | Core | Compute simple linear algebraic expressions |
| 40 | B | A.FO.07.12 | Core | Compute simple linear algebraic expressions |
| 41 | D | A.FO.07.08 | Future | Find and interpret x and y intercepts |
| 42 | B | A.FO.07.13 | Future | Generate and solve linear equations |
| 43 | A | A.PA.07.03 | Future | Graph linear equations \& interpret slope |
| 44 | B | A.PA.07.05 | Future | Use proportional \& linear relationships |
| 45 | C | A.PA.07.06 | Future | Compute the slope of a linear equation |
| 46 | C | A.PA.07.07 | Future | Graph linear equa'ns, interpret slope, y- intercept |
| 47 | A | A.PA.07.09 | Future | Recognize inversely proportional relationships |
| 48 | A | D.AN.07.02 | Future | Make, interpret scatterplots; find line of best fit |
| 49 | A | N.MR.07.02 | Future | Solve problems involving derived quantities |

