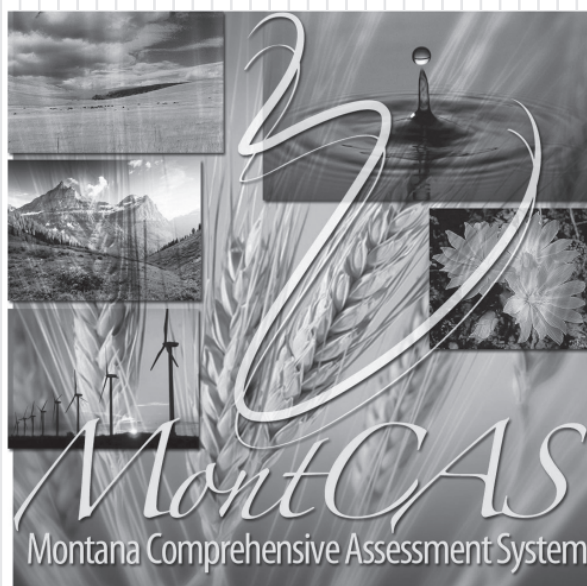


Montana Comprehensive Assessment System (MontCAS CRT)

GRADE 7
COMMON RELEASED ITEMS
SPRING 2010



opi.mt.gov

Montana
Office of Public Instruction
Denise Juneau, State Superintendent

Mathematics (No Calculator)

1. Study the equations below.

$$x = (30 - 10) \div 5 + 15$$

$$y = 30 - (10 \div 5) + 15$$

$$z = 30 - 10 \div (5 + 15)$$

Which statement is true about the solutions of these equations?

- A. $x = y$
 - B. $y = z$
 - C. $y < x$
 - D. $z < y$
2. A survey at a school found that 3 out of 5 students prefer white milk over chocolate milk. There are 340 students at the school. According to the survey, about how many students prefer **chocolate** milk?
- A. 68
 - B. 113
 - C. 136
 - D. 170

3. Which expression has a value greater than $\frac{1}{2}$?

A. $\frac{1}{2} - \frac{1}{8}$

B. $\frac{1}{2} \times \frac{1}{8}$

C. $\frac{1}{8} \div \frac{1}{2}$

D. $\frac{1}{2} \div \frac{1}{8}$

4. Which number is equivalent to $\frac{60}{36}$ in simplest form?

A. $\frac{3}{5}$

B. $\frac{10}{6}$

C. $1\frac{24}{36}$

D. $1\frac{2}{3}$

5. The planet Mercury is approximately 36,000,000 miles from the Sun. What is this number expressed in **scientific notation**?

A. 3.6×10^6

B. 3.6×10^7

C. 36×10^6

D. 36×10^7

6. Compute:

$$12 - 0.03$$

7. What is $\frac{12}{25}$ expressed as a percent?

8. a. On the grid in your Answer Booklet, draw an x -axis and a y -axis, label the scale, and plot the points $P(-5, 5)$, $Q(-5, 8)$, and $R(-1, 5)$. Connect the points to make triangle PQR .
- b. Translate triangle PQR eight units to the right and two units down to create triangle KLM . Label triangle KLM on your coordinate plane.
- c. Reflect triangle KLM over the x -axis to create triangle GHI . Label triangle GHI on your coordinate plane.
- d. Describe a series of transformations that will move triangle GHI to the same location as triangle PQR without passing over or through triangle KLM .

Scoring Guide

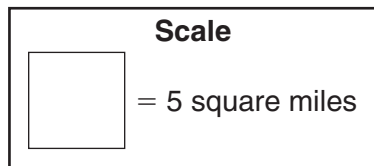
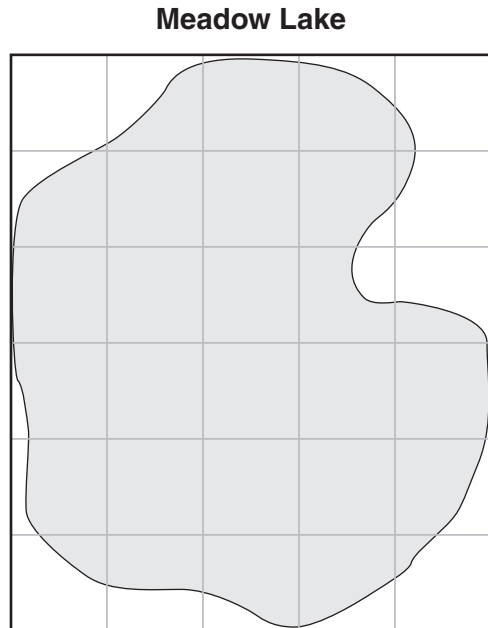
Score	Description
4	4 points
3	3 points
2	2 points
1	1 point
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Scoring Notes

- Part a: 1 point points correctly plotted
- Part b: 1 point triangle correctly translated $K(3, 3)$, $L(3, 6)$, $M(7, 3)$ or correct based on incorrect part a
- Part c: 1 point triangle correctly reflected $G(3, -3)$, $H(3, -6)$, $I(7, -3)$ or correct based on incorrect part a and/or part b
- Part d: 1 point correct description, answers may vary; one possible series: translate GHI 8 units to the left and 2 units down, then reflect it over the x -axis, or correct based on incorrect part a and/or part b and/or part c

Mathematics (Calculator)

9. Study the map of Meadow Lake below.



Which is the **best** estimate for the area of Meadow Lake?

- A. 20 square miles
- B. 30 square miles
- C. 100 square miles
- D. 150 square miles

10. Hikers start climbing down a mountain from an elevation of 2400 feet above sea level. Each hour, they climb down 400 feet. Which equation can be used to find the elevation, e , of the hikers after h hours?

- A. $e = -400 + 2400h$
- B. $e = 400h - 2400$
- C. $e = 2400 + 400h$
- D. $e = 2400 - 400h$

11. Susan is creating a circle graph to show the survey results below.

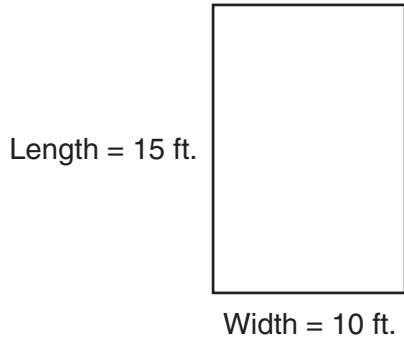
Favorite Subject in School

Subject	Percent of Students
Mathematics	50%
Science	25%
Social studies	10%
Other	15%

How many degrees should be in the section of the circle graph that represents science?

- A. 25°
- B. 54°
- C. 90°
- D. 180°

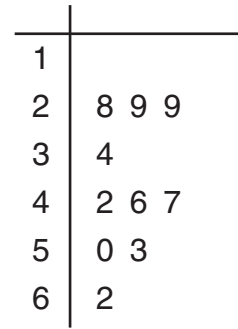
12. A diagram of a rectangular patio is shown below.



The patio is being enlarged so that its new area will be 6 times as large as it is now. The length of the patio will remain the same. What will be the width, in feet, of the new patio?

- A. 16
- B. 60
- C. 150
- D. 900

13. The stem-and-leaf plot below shows the number of students absent from Jada's middle school each day during the past two weeks.



Key: 5|0 = 50 students

What is the mode of the number of students who were absent during this time?

- A. 44
- B. 34
- C. 29
- D. 9

14. A movie theater offers the ticket special below.

1 ticket:	\$25.00
2 tickets:	\$23.50 each
3 tickets:	\$22.00 each
4 tickets:	\$20.50 each
5 tickets:	\$19.00 each

Based on the pattern in the table, what is the **least** number of tickets that must be bought to make the cost of each ticket \$10.00?

- A. 10 tickets
 - B. 11 tickets
 - C. 12 tickets
 - D. 13 tickets
15. Study the equation below.

$$\frac{8x}{5} = 40$$

Which equation could be the next step in solving the equation?

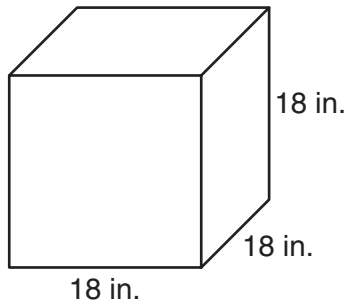
- A. $\frac{x}{5} = 32$
- B. $\frac{x}{5} = 48$
- C. $8x = 45$
- D. $8x = 200$

16. Mr. Stuart packed 1 suit, 4 shirts, 3 ties, and 2 belts for a trip. How many different outfits consisting of 1 suit, 1 shirt, 1 tie, and 1 belt can he make?

- A. 4
 - B. 10
 - C. 14
 - D. 24
17. A store is having a promotion. Every third customer receives a hat, and every fifth customer receives a T-shirt. No customers come in the store twice. Of the first 100 customers, how many receive **both** a hat and a T-shirt?

- A. 5
- B. 6
- C. 15
- D. 30

18. A cardboard box is shown below.



What is the volume, in cubic feet, of this box?

- A. 3.375 cu. ft.
 - B. 4.5 cu. ft.
 - C. 6 cu. ft.
 - D. 18 cu. ft.
19. Which expression is equivalent to $25(a + b + c)$?
- A. $25abc$
 - B. $25 + abc$
 - C. $25a + b + c$
 - D. $25a + 25b + 25c$

20. The chart below shows a pattern.

x	y
1	5
2	8
3	11

What is the rule for this pattern?

- A. $y = 5x$
 - B. $y = 3x + 2$
 - C. $y = 2x + 4$
 - D. $y = 4x + 1$
21. Jeremy bought 3 CDs that cost \$15 each and 3 books that cost \$5 each. To find his total, he used the expression below.

$$(3 \times 15) + (3 \times 5)$$

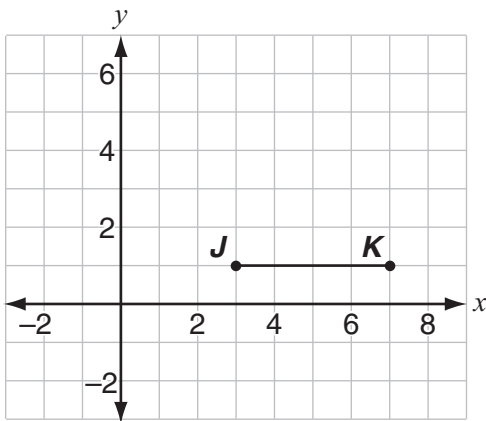
Which expression shows another way Jeremy could find his total?

- A. $3 \times (15 + 5)$
- B. $3 \times 15 \times 5$
- C. $(3 + 15) \times (3 + 5)$
- D. $3 + (15 \times 5)$

22. Kelly has 300 stitches on her knitting needle. The number of stitches on the needle decreases by 4 for each row she knits. Which equation can be used to find the number of stitches, n , on Kelly's knitting needle after she knits r rows?

- A. $n = 300 - 4r$
- B. $n = 300 - 4 - r$
- C. $n = 4 - 300r$
- D. $n = (300 - 4)r$

23. Segment JK is graphed below.



Which point, if connected to points J and K , would complete a right triangle?

- A. $(7, -2)$
- B. $(5, 7)$
- C. $(5, -3)$
- D. $(4, 1)$

24. In a jar, there are 13 cards with a boy's name on each card and 14 cards with a girl's name on each card. One of these cards is chosen at random. What is the probability that the card will have a girl's name on it?

- A. $\frac{1}{14}$
- B. $\frac{13}{27}$
- C. $\frac{1}{2}$
- D. $\frac{14}{27}$

25. The chart below lists the fastest speeds certain animals can move.

Animal Speeds

Animal	Fastest Speed (mph)
Marine mammal Killer whale	35
Land mammal Cheetah	70
Fish Sailfish	68
Bird Peregrine falcon	150
Insect Dragonfly	36
Snake Black mamba	14

What is the range of speeds of the animals listed in the chart?

- A. 150
- B. 136
- C. 62
- D. 52

26. Mr. Davis has his classroom arranged in tables of 4 students. Students completely fill each table before sitting at a new one. The number of students in each of his classes is shown in the chart below.

Class	Number of Students
1	25
2	24
3	27
4	21

Which class will have 1 table with only 3 students?

- A. Class 1
- B. Class 2
- C. Class 3
- D. Class 4

27. Mary drew a triangle QRS . Angle QRS is 100° , and the other two angles in the triangle are congruent. What is the measure of angle RSQ ?

- A. 100°
- B. 80°
- C. 60°
- D. 40°

28. Students are making graphs of their own height over time. Which graph is **best** to use to show a student's change in height over time?

- A. circle graph
- B. line graph
- C. pictograph
- D. stem-and-leaf graph

29. A taxi service charges the rates shown in the table below.

Taxi Service Rates

Number of Miles m	Cost c
1	\$4.25
2	\$5.50
3	\$6.75
4	\$8.00

Which equation can be used to calculate the cost, c , of the taxi service when the ride is m miles long?

- A. $c = m + 3$
- B. $c = m + 1.25$
- C. $c = 1.25m + 3$
- D. $c = 3m + 1.25$

30. A circular stage has a 30-foot diameter. Which measure is closest to the distance around the stage?

- A. 50 feet
- B. 100 feet
- C. 200 feet
- D. 700 feet