Montana Comprehensive Assessment System (*MontCAS CRT*)
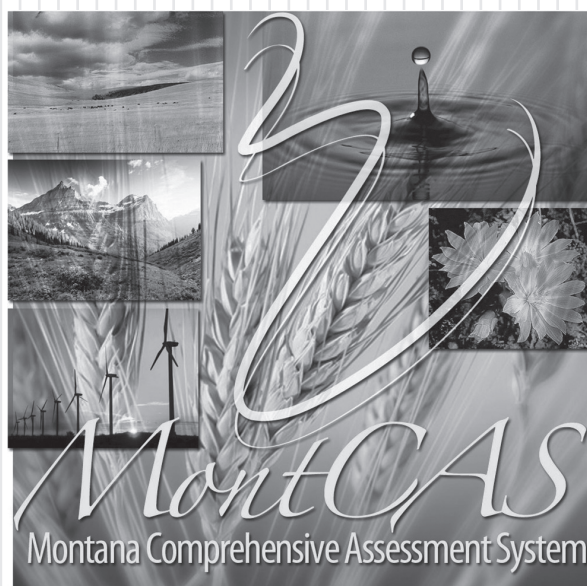
Grade 6
Common Released Items
Spring 2011

Montana
Office of Public Instruction
Denise Juneau, State Superintendent

opi.mt.gov

Mathematics (No Calculator)

1. Which number is equivalent to
$4 \times 4 \times 4 \times 4 \times 4 \times 4$?

   A. 4^4
   B. 4^6
   C. 6^4
   D. 6^6

2. Kurt went on a bird-watching trip with his class. The class saw 20 different birds, and 30% of the birds were great blue herons. How many great blue herons did the class see?

   A. 3
   B. 6
   C. 10
   D. 15

3. The table below shows the scores Shane received in four events at a gymnastics meet.

   Shane's Gymnastics Scores

Event	Score
Vault	9.125
Rings	9.069
High bar	9.095
Parallel bars	9.25

   In which event did Shane receive the **highest** score?

   A. Vault
   B. Rings
   C. High bar
   D. Parallel bars

4. Tim served $\frac{6}{10}$ of a pie to his guests. Which fraction is equivalent to $\frac{6}{10}$?

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

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

   C. $\frac{2}{3}$

   D. $\frac{4}{5}$

5. What is the prime factorization of 72?

   A. $3^2 \times 2^3$

   B. $6 \times 3 \times 2^2$

   C. $3^3 \times 2^2$

   D. $3^2 \times 4 \times 2$

6. Which statement is true about the quotient of $\frac{1}{4}$ divided by 2?

   A. It is half of $\frac{1}{4}$.

   B. It is two less than $\frac{1}{4}$.

   C. It is two more than $\frac{1}{4}$.

   D. It is twice as great as $\frac{1}{4}$.

7. One cup of Nutty Flakes cereal contains 8% of the recommended daily allowance of calcium. What is 8% written as a decimal?

   A. 8.0

   B. 0.8

   C. 0.08

   D. 0.008

8. What is the next number in the pattern below?

   0.29, 0.58, 0.87, 1.16, 1.45, 1.74, 2.03, __?__


9. Compute:

   $$\frac{5}{6} - \frac{1}{4}$$

10. Jake wrote numbers on cards to make the pattern shown below.

| 25.6 | 26.4 | 26.1 | 26.9 | 26.6 | 27.4 | 27.1 |

What number will be next in this pattern?

A. 26.3

B. 26.8

C. 27.4

D. 27.9

11. Bridget combined two equilateral triangles at one side to make a quadrilateral. Which quadrilateral did she make?

A. rhombus

B. rectangle

C. hexagon

D. square

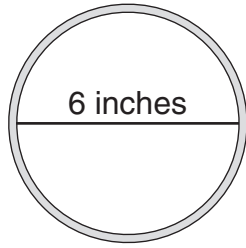12. Mr. Jackson took his students bowling. He recorded the scores of his students in the stem-and-leaf plot shown below.

```
6 | 4 5 6
7 | 5 7 8 8 9
8 | 1 1 3
9 | 0 4 8
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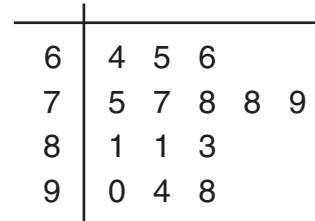
Key: 6 | 4 = 64

How many students had a score less than 83?

A. 8

B. 9

C. 10

D. 11

13. Which equation **must** be true for any value of t?

A. $18t = 18 \div t$

B. $18 - t = 18 + t$

C. $6 + 0 + t = 6 + t$

D. $0 - t = 0 + t$

14. Ned used a piece of wire to make the circular hoop shown below.

6 inches

About how long is the wire? (Use 3.14 for π.)

A. 19 inches

B. 28 inches

C. 38 inches

D. 113 inches

15. The front-page layout of a school newspaper is divided into three sections, as shown below.

Advertisements $\frac{1}{5}$ page	
Photography ?	News $\frac{1}{2}$ page

What fraction of the front page is photography?

A. $\frac{3}{10}$

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

C. $\frac{7}{10}$

D. $\frac{4}{5}$

16. Jane went shopping for school supplies and spent $16.26.

- She bought 3 notebooks.
- Each notebook cost the same amount.
- She bought a lunchbox for $9.99.

Which equation can be used to find the cost, n, of one notebook?

A. $n - \$9.99 = \$16.26$

B. $n + \$9.99 = \$16.26$

C. $3n + \$9.99 = \$16.26$

D. $3n - \$9.99 = \$16.26$

17. Laura is putting a cloth border along the outside edge of a rectangular mirror that is 11 inches long and 17 inches wide. What is the distance around the mirror?

A. 187 square inches

B. 187 inches

C. 56 square inches

D. 56 inches

18. Jill is making a scale drawing of a room that is 24 feet wide. The scale she is using is shown below.

1 inch = 8 feet

What should be the width of the room in the scale drawing?

A. 3 inches

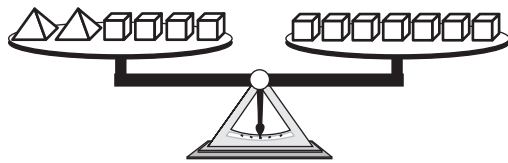B. 10 inches

C. 32 inches

D. 192 inches

19. Jessica wants to frame a picture. Her choices for frame size, shape, and color are shown in the chart below.

Size	Shape	Color
Small	Rectangle	Green
Medium	Circle	White
Large		Black
		Red

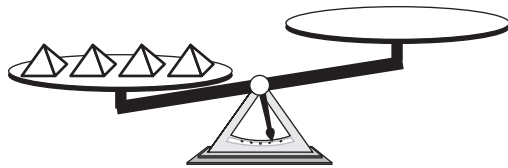How many different ways can Jessica choose one size, one shape, and one color for her frame?

A. 6

B. 9

C. 18

D. 24

20. Look at the two scales shown below.

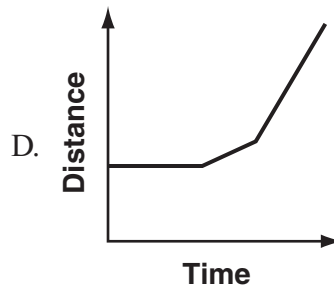

Scale 1

Scale 2

Scale 1 is balanced. How many ⬜ are needed to balance Scale 2?

A. ⬜⬜⬜

B. ⬜⬜⬜⬜

C. ⬜⬜⬜⬜⬜⬜

D. ⬜⬜⬜⬜⬜⬜⬜

21. Danielle rode her bike to school.

- She began riding slowly.

- She stopped to talk to a friend for a few minutes.

- She then rode very quickly so that she would not be late for school.

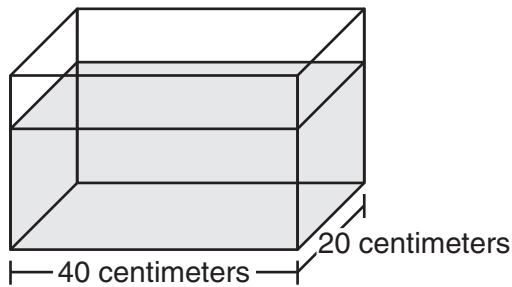Which graph could show Danielle's trip to school?

A.

B.

C.

D.
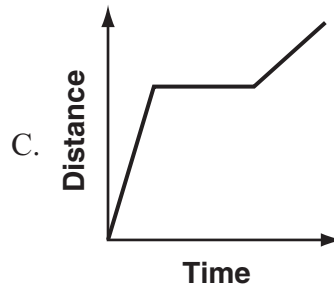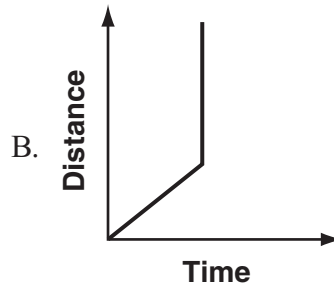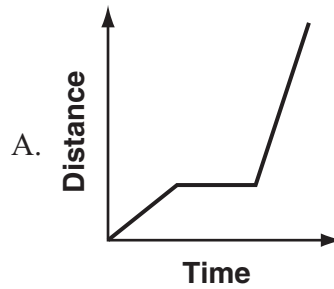
22. What is the value of x in the equation below?

$$x - 3.5 = 14$$

A. 49

B. 17.5

C. 10.5

D. 4

23. Carlos has the fish tank shown below.

40 centimeters, 20 centimeters

Volume of Rectangular Prism
$V = l \times w \times h$

Carlos fills the fish tank with water to a height of 30 centimeters. What is the volume of the water in the fish tank?

A. 2,600 cm³

B. 5,200 cm³

C. 15,600 cm³

D. 24,000 cm³

24. The writers for a school newspaper want to predict the number of students who will vote in the next student council election. Which group would be the **best** to survey?

A. all students who write for the newspaper

B. students who are part of the student council

C. students from different grades during a lunch period

D. all sixth-grade students when they are in their homeroom
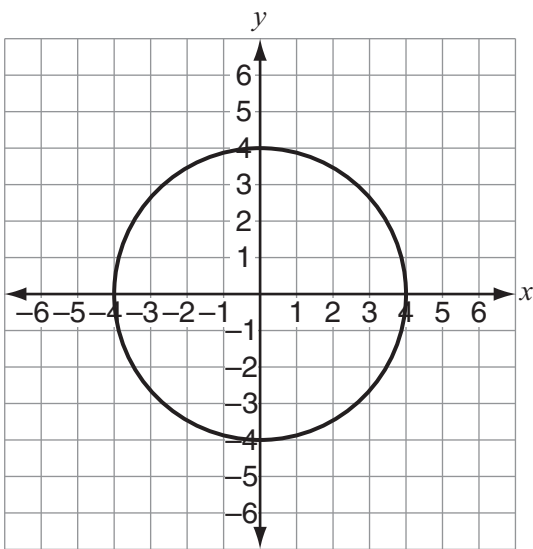
25. Look at the pattern below.

☆○△△□☆○△△□☆○△△□☆○

What will be the 30th shape in this pattern?

A. ☆

B. ○

C. △

D. □

26. It is estimated that the human brain has 100,000,000,000 nerve cells. Which expression shows another way to write 100,000,000,000?

A. 1×10^9

B. 1×10^{10}

C. 1×10^{11}

D. 1×10^{12}

27. Look at the circle on the coordinate grid below.

Which ordered pair could represent a point **inside** the circle?

A. (2, 4)

B. (0, –3)

C. (–1, –6)

D. (–4, 5)

28. Luisa surveyed 25 students from her school and found that $\frac{1}{5}$ of them had more than one hour of homework each night. There are 275 students in her school. Based on Luisa's survey, how many students can be expected to have more than one hour of homework each night?
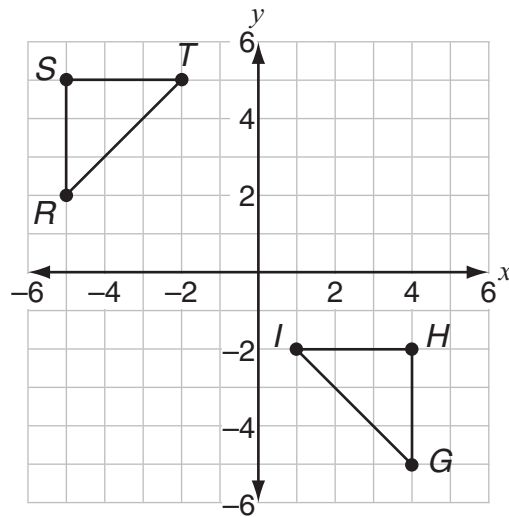
A. 87

B. 55

C. 33

D. 11

29. The histogram below shows the number of hours the students in Mr. Hogan's class exercised last week.
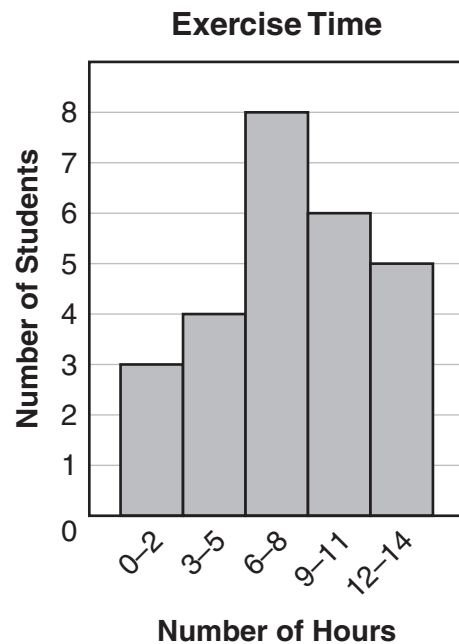
What is the total number of students who exercised less than 9 hours last week?

A. 6

B. 11

C. 15

D. 21

30. Copy the coordinate grid and triangles *RST* and *GHI* below into your Answer Booklet.

a. On the coordinate grid in your Answer Booklet, reflect (flip) triangle *RST* over the *y*-axis. Label the new triangle *JKL*.

b. Describe the transformations that would move triangle *JKL* to its image, triangle *GHI*.

c. Rotate (turn) triangle *GHI* 90° clockwise about point *I*. Then translate (slide) the image two units to the left. Label the new triangle *XYZ*.