



# **RELEASED ITEMS**

**MATHEMATICS  
GRADE 6**

**Fall 2006**

**MICHIGAN STATE BOARD OF EDUCATION  
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# PART 1

## DIRECTIONS

This test has three parts. You may **NOT** use a calculator on the first part. You may use open space in this test booklet for scratch paper. No additional sheets may be used.

**There are two types of items on this test: multiple-choice and open-ended.**

1. Multiple-choice items will require you to choose the best answer from among four answer choices. For these items, 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 an item, be sure to mark the answer to the next item in the correct place in your **Answer Document**.
2. Two open-ended items will be found in your test booklet and require you to write, explain, or show your work. For these items, show all of your work neatly and clearly in the space provided in your **Answer Document**.

### Sample Multiple-Choice Item:

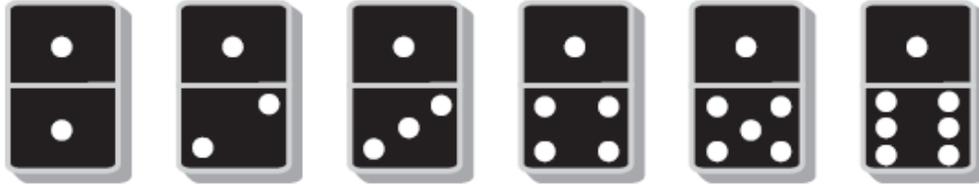
Marty wants to put 75 CDs into cases. Each case holds exactly 8 CDs. What is the *least* number of cases that Marty will need to hold all his CDs?

- A 8
- B 9
- C 10
- D 11

For this sample item, the correct answer is **C**. Circle **C** is filled in on the sample item in your **Answer Document**.

**Sample Open-Ended Item:**

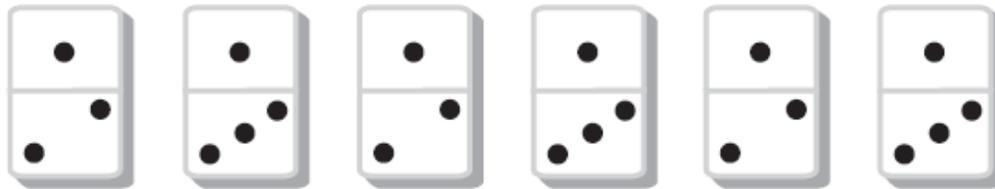
Solve the following problem.



**A** What pattern do these dominoes display?

**They all have one on top. At the bottom it starts with one and keeps adding one until it reaches six.**

**B** Draw another domino pattern different from the one above.



**C** Describe the pattern you drew.

**On the first, third, and fifth dominoes, I drew one on top and two on bottom. On the second, fourth, and sixth, I put one on top and three on the bottom.**

For this sample item, you would answer Part A by explaining that they all have one on top. At the bottom it starts with one and keeps adding one on each consecutive domino. For Part B, you would draw a different domino pattern than the one above. Remember to show your work. For Part C, you would explain or describe the pattern you drew.

You will have at least 30 minutes to finish Part 1 of this test. You will be given additional time if necessary.

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

If you do not understand any of these directions, please raise your hand.

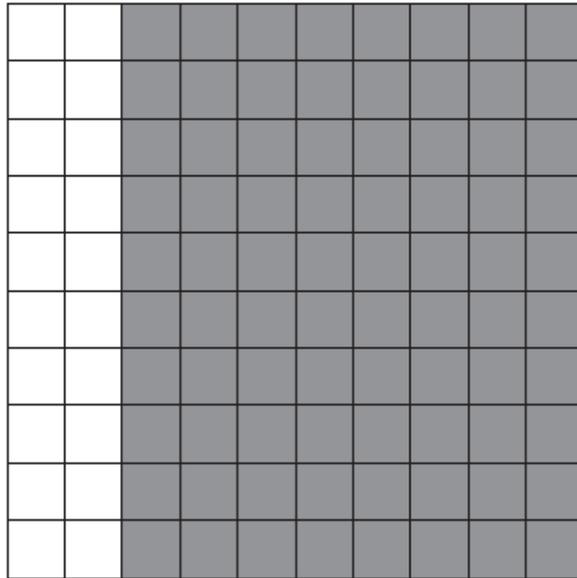
- 1 There are 25 students in Mrs. Paul's class. Each student needs 11 sheets of paper. How many sheets of paper are needed for the entire class?
- A 36 sheets
  - B 50 sheets
  - C 126 sheets
  - D 275 sheets
- 2 Marcus planted 20 rose bushes in his garden. This year, each rose bush had 18 roses. How many roses were there in all?
- A 36 roses
  - B 38 roses
  - C 260 roses
  - D 360 roses
- 3 There are 365 days in a year and 24 hours in a day. How many hours are there in a year?
- A 2,190 hours
  - B 8,660 hours
  - C 8,760 hours
  - D 9,660 hours

- 4 What is the correct answer to the following?

$$13 \overline{)728}$$

- A 5
- B 6
- C 56
- D 560
- 5 Kelly can type 50 words per minute. How long will it take her to type 6,500 words?
- A 13 minutes
- B 130 minutes
- C 1,300 minutes
- D 13,000 minutes
- 6 A parking garage has 4,200 parking spaces and 10 levels. Each level has the *same* number of parking spaces. How many parking spaces are on each level of the garage?
- A 42 parking spaces
- B 420 parking spaces
- C 4,200 parking spaces
- D 42,000 parking spaces

7 The shaded area of the grid shows 0.80. How is this same number expressed using tenths?



- A 0.8
- B 0.81
- C 1.8
- D 8.10

8 Which number is the same as 0.72?

- A 72 hundredths
- B 72 tenths
- C 72 ones
- D 72 tens

- 9 Which number is equal to 17 tenths?
- A 0.17
  - B 1.07
  - C 1.7
  - D 17.0
- 10 Blake estimates that he spends 12 minutes every day taking a shower. He multiplies 12 minutes by 365 days in a year. He found that he spends 4,380 minutes a year taking showers. How many hours is this?
- A 43.80 hours
  - B 54.75 hours
  - C 73.00 hours
  - D 146.00 hours
- 11 Larry's rabbit weighs 7 pounds, 2 ounces. How many total ounces does Larry's rabbit weigh?
- A 72 ounces
  - B 107 ounces
  - C 112 ounces
  - D 114 ounces
- 12 Jesse weighs 41 kilograms. How many grams equal 41 kilograms?
- A 0.041 grams
  - B 410 grams
  - C 4,100 grams
  - D 41,000 grams

## 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 sheets may be used.

If you finish early, you may check your work for Part 2 **ONLY**.

Do **NOT** look at items in other parts of this test.

You will have at least 50 minutes to finish Part 2 of this test.

- 13 Matt has 12 treats to divide evenly among his 3 dogs. Which statement shows how he can do this?
- A by breaking half the treats into two pieces, and matching each half-treat with a whole treat
  - B by putting aside 2 treats, and then giving each dog 3 treats
  - C by grouping the treats into three equal parts
  - D by giving 2 treats to each dog
- 14 Which of the following is equivalent to  $100 \div 12$ ?
- A  $\frac{1}{2}$
  - B  $\frac{12}{100}$
  - C  $\frac{88}{100}$
  - D  $\frac{100}{12}$
- 15 There are 66 people to be seated for a dinner. Each table seats 4 people. What is the *least* number of tables needed so that everyone will have a seat?
- A 16
  - B 17
  - C 62
  - D 70

- 16 Which equation is equal to this division sentence?

$$36 \div 5 = 7 \text{ R } 1$$

- A  $36 = 5 \times 7 + 1$
- B  $36 = 5 \times 7 \times 1$
- C  $5 = 36 \div 2 - 1$
- D  $5 = 36 \div 7 - 1$

- 17 Which equation is equal to the division sentence below?

$$47 \div 7 = 6 \text{ R } 5$$

- A  $47 = 7 \times 6 \div 5$
- B  $47 = 7 \times 6 \times 5$
- C  $47 = 7 \times 6 + 5$
- D  $47 = 7 \times 6 - 5$

- 18 Which equation is equal to this division sentence?

$$17 \div 5 = 3 \text{ R } 2$$

- A  $5 - 2 + 3 = 17$
- B  $3 \times 5 + 2 = 17$
- C  $5 \times 3 \times 2 = 17$
- D  $3 \times 5 - 2 = 17$

- 19 James is making a recipe that calls for a 64-ounce can of tomato sauce. The grocery store is out of the large cans, but they have several smaller sizes to choose from: 6-ounce, 8-ounce, 12-ounce, and 15-ounce. What should he buy in order to have exactly the 64 ounces he needs?
- A eleven 6-ounce cans
  - B eight 8-ounce cans
  - C five 12-ounce cans
  - D five 15-ounce cans
- 20 Ms. Kerry had 195 ounces of dried beans that she wanted to use to make beanbags. What is the greatest number of 16-ounce beanbags she could make?
- A 8 beanbags
  - B 12 beanbags
  - C 15 beanbags
  - D 20 beanbags
- 21 Linda had a flock of 238 sheep. She divided her flock as evenly as possible among 4 grazing fields. Which shows how Linda could have divided her flock among the fields?

**A**

59 sheep	59 sheep
59 sheep	59 sheep

**B**

61 sheep	59 sheep
59 sheep	61 sheep

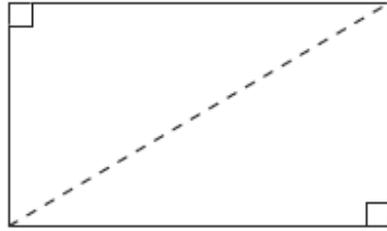
**C**

60 sheep	59 sheep
59 sheep	60 sheep

**D**

61 sheep	61 sheep
61 sheep	61 sheep

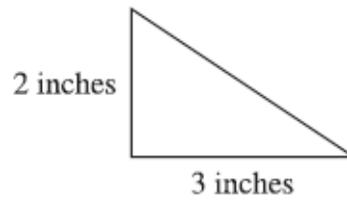
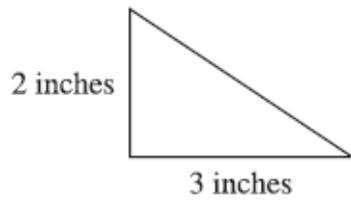
22 The rectangle below is divided into two triangles by drawing a diagonal.



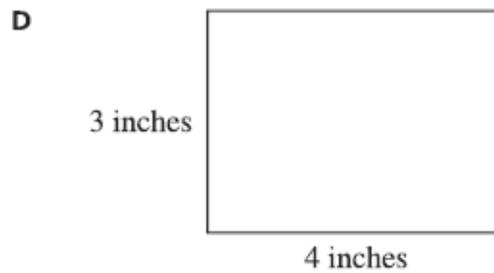
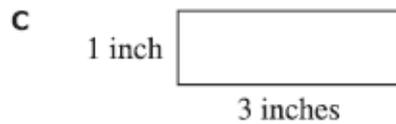
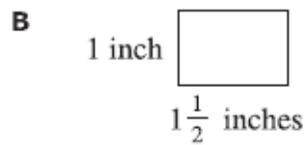
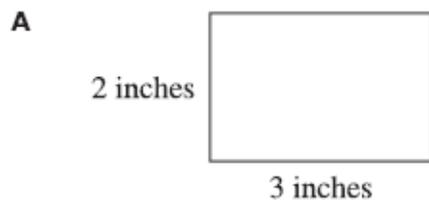
Which statement is true about the area of the rectangle and the area of one of the triangles?

- A The area of one triangle is equal to  $\frac{1}{4}$  the area of the rectangle.
- B The area of one triangle is equal to  $\frac{1}{2}$  the area of the rectangle.
- C The area of one triangle is equal to the area of the rectangle.
- D The area of one triangle is twice the area of the rectangle.

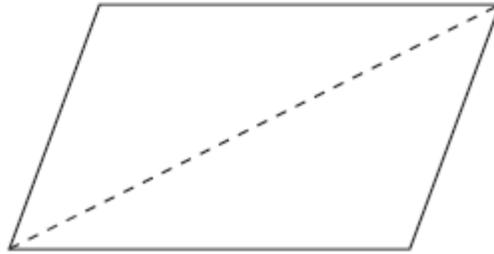
23 Look at the two right triangles below.



Which of the following rectangles has the same area as the area of the two right triangles combined?

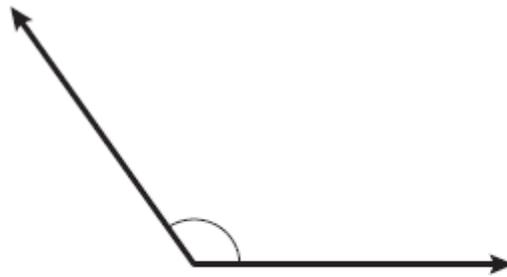


- 24 The parallelogram below is divided into two triangles by drawing a diagonal.



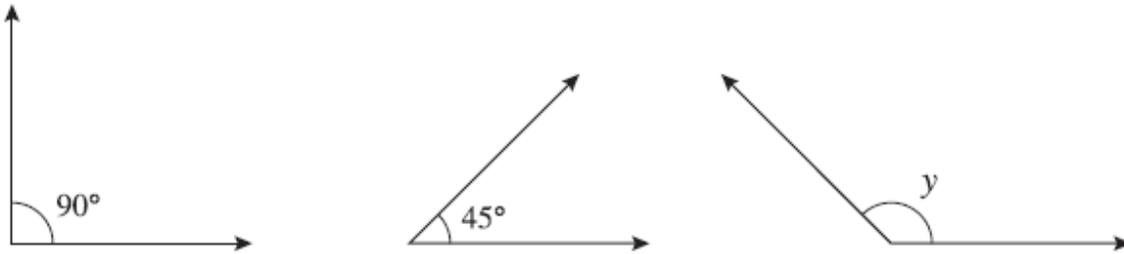
Which statement is true about the area of the parallelogram and the area of one of the triangles?

- A The area of the parallelogram is twice the area of one of the triangles.
  - B The area of the parallelogram is four times the area of one of the triangles.
  - C The area of the parallelogram is half the area of one of the triangles.
  - D The area of the parallelogram is one-fourth the area of one of the triangles.
- 25 Which type of angle is shown below?

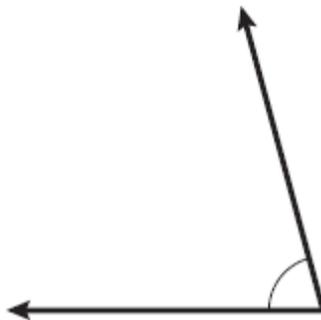


- A right
- B acute
- C obtuse
- D straight

- 26 A  $90^\circ$  and a  $45^\circ$  angle are shown below. What is the *best* estimate for the measure in degrees of angle  $y$ ?



- A  $125^\circ$
  - B  $135^\circ$
  - C  $145^\circ$
  - D  $155^\circ$
- 27 Which is closest to the measure of the angle below?

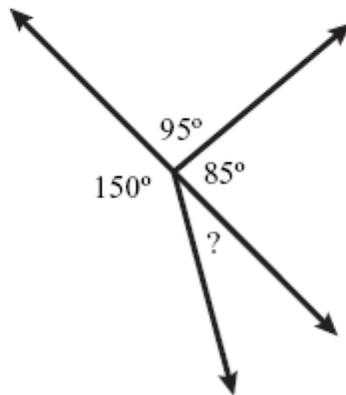


- A  $15^\circ$
- B  $75^\circ$
- C  $85^\circ$
- D  $105^\circ$

28 What is the sum of the measures of angles that form a straight line?

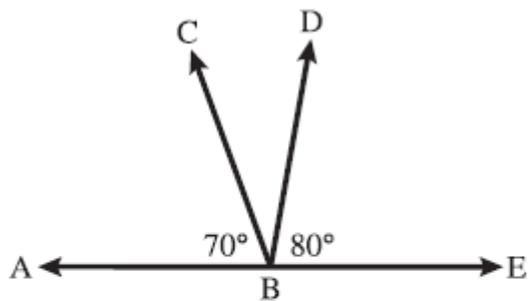
- A 45°
- B 90°
- C 180°
- D 360°

29 What is the measure of the missing angle in the diagram below?



- A 30°
- B 50°
- C 60°
- D 85°

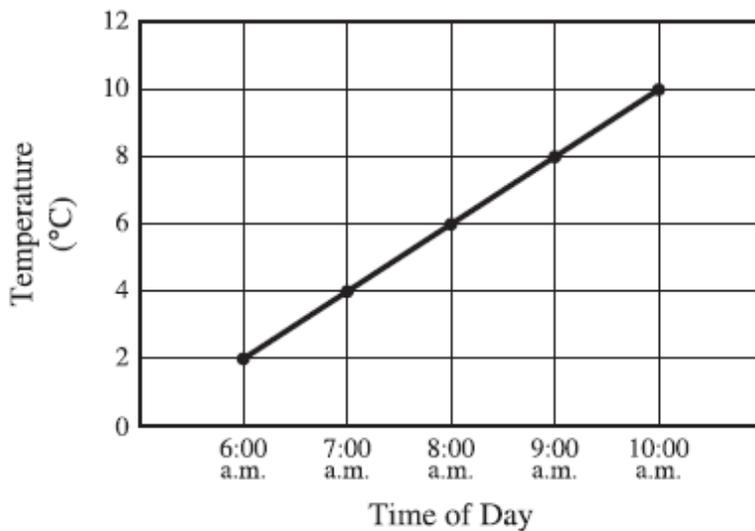
30 What is the measure of angle DBC in the figure below?



- A 10°
- B 30°
- C 75°
- D 150°

31 Which describes the pattern of time and temperature change shown in the graph below?

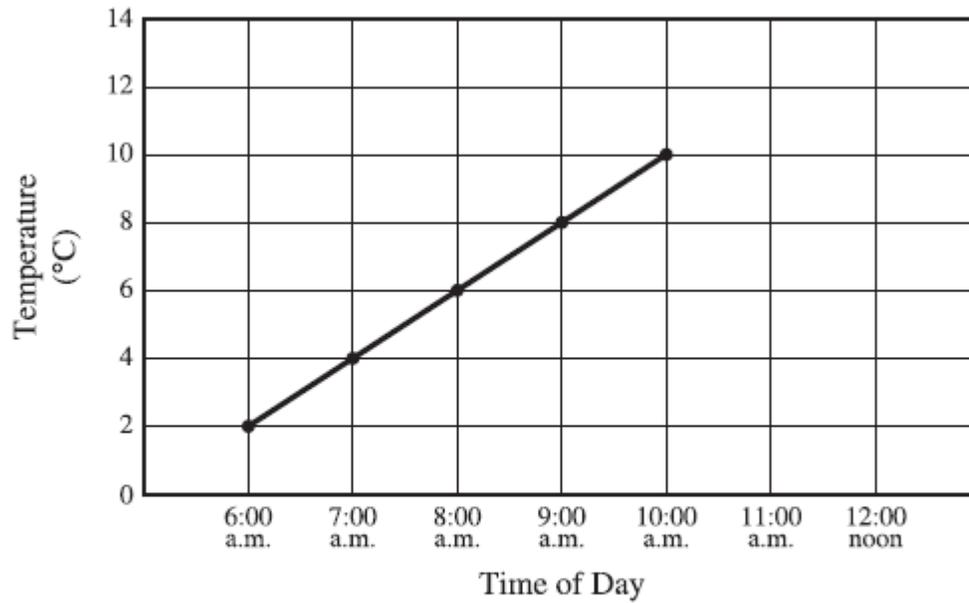
**Weather on the School Playground, December 3**



- A For each hour that passes, the temperature drops 2°C.
- B For each hour that passes, the temperature rises 2°C.
- C For each hour that passes, the temperature drops 4°C.
- D For each hour that passes, the temperature rises 4°C.

- 32 If this pattern continues, what will the temperature be on the school playground at 12:00 noon on December 3?

**Weather on the School Playground, December 3**



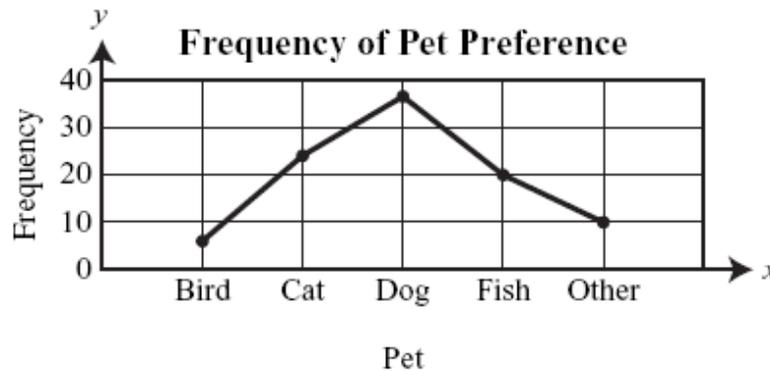
- A 2°C
- B 10°C
- C 12°C
- D 14°C

33 Ninety-six customers at a pet store were asked, "What is your favorite pet?" The owner recorded the answers in the table below.

**Pet Preference**

Pet	Number Choosing
Bird	6
Cat	24
Dog	36
Fish	20
Other	10

Then he drew a graph to display the data.



What is wrong with the graph?

- A The graph should have included more pets.
- B The graph should have been a double-line graph.
- C "Dog" should have been the first pet listed on the x-axis.
- D A line graph should not have been used with these data.

## PART 3

### DIRECTIONS

You will now begin Part 3 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 sheets may be used.

If you finish early, you may check your work for Part 3 **ONLY**.

Do **NOT** look at items in other parts of this test.

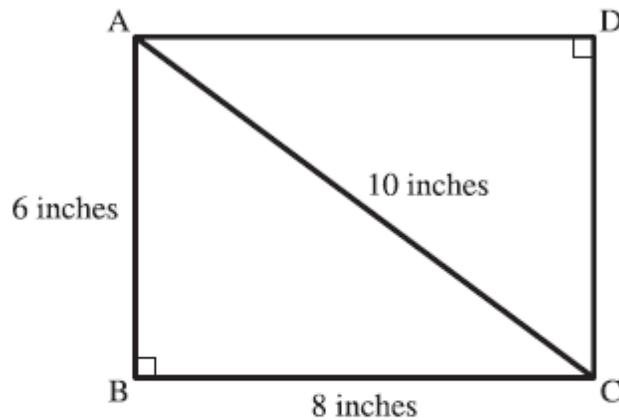
You will have at least 50 minutes to finish Part 3 of this test.

- 34 In Tom's class, 20 of the 25 students got a perfect score on a test. What percent of the students got a perfect score?
- A 0.80%
  - B 20%
  - C 25%
  - D 80%
- 35 There are 20 students in Michelle's class. Ten of the students are wearing white shoes. What percent of the students are wearing white shoes?
- A 10%
  - B 20%
  - C 30%
  - D 50%
- 36 Patrick counted the number of red candies in a bag of colored candies. He found that 8 of the 20 candies are red. What percent of the candies are red?
- A 4%
  - B 8%
  - C 20%
  - D 40%

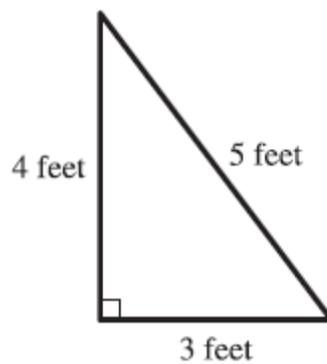
- 37 Mr. Kohler gave each of his 2 daughters \$10.00 to buy cotton candy. Bags of cotton candy cost \$2.50 each. How many bags can they afford to buy altogether?
- A 4
- B 6
- C 8
- D 10
- 38 Three friends are sharing 2 pizzas. Which fraction represents the portion of pizza each friend may eat if they share the pizzas equally?
- A  $\frac{1}{3}$
- B  $\frac{1}{2}$
- C  $\frac{2}{3}$
- D  $\frac{3}{2}$
- 39 Casey cut a pie into 4 slices, then ate  $\frac{1}{2}$  of one of the slices. How much of the pie did Casey eat?
- A  $\frac{1}{8}$
- B  $\frac{1}{2}$
- C  $\frac{3}{4}$
- D  $\frac{7}{8}$

- 40 In John's class,  $\frac{1}{2}$  of the students had pizza for lunch. What percent of the students had pizza for lunch?
- A 12%
  - B 20%
  - C 50%
  - D 75%
- 41 In a bag of marbles, 0.25 of the marbles are green. What percent of the marbles are green?
- A 0.25%
  - B 2.5%
  - C 25%
  - D 250%
- 42 Ralph bought a package of assorted colored paper, of which  $\frac{2}{5}$  of the papers are blue. What percent of the papers are blue?
- A 4%
  - B 40%
  - C 52%
  - D 75%

- 43 What is the area of triangle ABC? (The area formula for a triangle is  $A = \frac{1}{2} bh.$ )

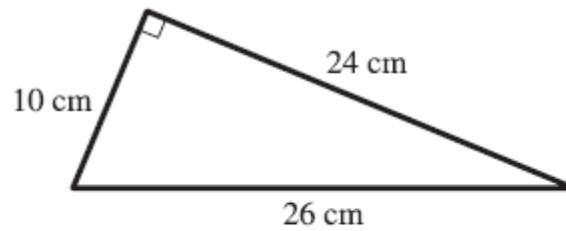


- A 14 square inches  
B 24 square inches  
C 28 square inches  
D 48 square inches
- 44 What is the area of this triangle? (The area formula for a triangle is  $A = \frac{1}{2} bh.$ )

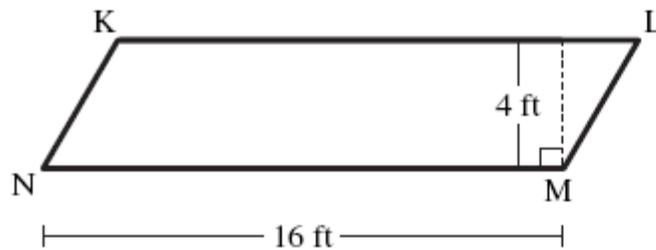


- A 6 square feet  
B 10 square feet  
C 12 square feet  
D 24 square feet

- 45 What is the area of this triangle? (The area formula for a triangle is  $A = \frac{1}{2} bh$ .)

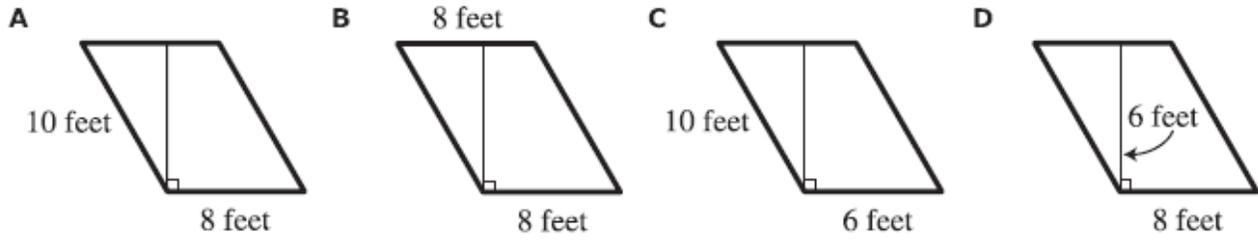


- A 60 square centimeters
  - B 120 square centimeters
  - C 130 square centimeters
  - D 240 square centimeters
- 46 What is the area of parallelogram KLMN?  
(The area formula for a parallelogram is  $A = bh$ .)

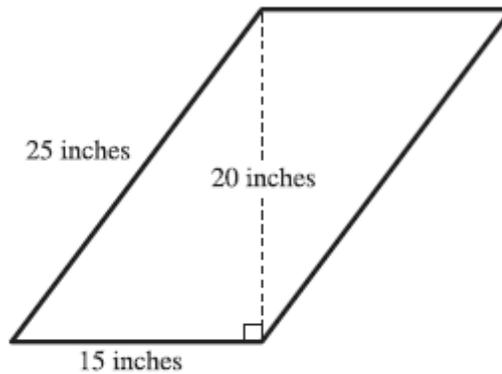


- A 32 ft<sup>2</sup>
- B 40 ft<sup>2</sup>
- C 64 ft<sup>2</sup>
- D 80 ft<sup>2</sup>

47 Which of the following has enough information given to find the area of the parallelogram?



48 What is the area of the parallelogram below?  
 (The area formula for a parallelogram is  $A = bh$ .)



- A 80 square inches
- B 150 square inches
- C 300 square inches
- D 375 square inches

- 49 A square has four equal interior angles. What is the sum of these angles?
- A  $90^\circ$
  - B  $180^\circ$
  - C  $200^\circ$
  - D  $360^\circ$
- 50 Marcus drew a triangle. The measure of the first interior angle is the same as the measure of the second interior angle. The measure of the third interior angle is  $80^\circ$ . What is the measure of the first interior angle?
- A  $35^\circ$
  - B  $40^\circ$
  - C  $50^\circ$
  - D  $100^\circ$
- 51 How does the sum of the interior angles of a parallelogram compare with the sum of the interior angles of a rectangle?
- A The two sums are the same.
  - B The sum is greater for the rectangle.
  - C The sum is greater for the parallelogram.
  - D You need to see the actual figures to make any comparison.

- 52 The Friendship Club is planning a party. Each club member wrote down the date on which she wanted to have the party. The club president needs to choose the date that is wanted by the *greatest* number of members. Which date should the club president choose?
- A the date that is the mode
  - B any date that was written
  - C the date that is the median
  - D a date that was not chosen
- 53 Jack compared the lengths of school years in different cities and recorded the data in the table below.

City	Length of School Year (in days)
Junction	180
Riley	182
Post	181
Fairfax	185
Bragg	182

Which statement about this information is true?

- A The mode is 185.
- B The median is 181.
- C The median and mode are equal.
- D The median is less than the mode.

- 54 The mode of the number of students at the new principal's "Get to Know the Students" lunches is 12. Which of the following statements must be true?
- A The total number of students divided by the number of students attending each lunch is 12.
  - B Up to and including 12 students can attend each lunch.
  - C The number of students who attend the lunch the most often is 12.
  - D The difference between the smallest number of students and the largest number of students at a lunch is 12.
- 55 Juanita swam  $\frac{1}{2}$  mile each day for 3 days in a row and then swam  $\frac{3}{4}$  mile each day for the next 3 days.
- Part A** Write a mathematical expression that gives the number of miles that Juanita swam.
- Part B** Using your answer to **Part A**, calculate the number of miles that Juanita swam during the 6 days combined.

**ANSWER THIS ITEM IN YOUR ANSWER DOCUMENT.**

**SHOW ALL YOUR WORK IN YOUR ANSWER DOCUMENT.**

- 56 One ounce of bean seeds is enough to plant a 10-foot row of bean plants. The table below shows how many ounces of seeds are needed for different length rows.

**Bean Seeds Needed**

Ounces of Seed	Length of Row (feet)
1	10
2	20
3	30
4	40
5	50
6	60
7	70
8	80

Make a line graph of this information. Be sure to title the graph, label the axes, and choose an appropriate scale.

**ANSWER THIS ITEM IN YOUR ANSWER DOCUMENT.**

**SHOW ALL YOUR WORK IN YOUR ANSWER DOCUMENT.**

- 57 A car driving east turned 45 degrees to the left. In what direction was the car driving then?



- A northwest
- B northeast
- C southwest
- D southeast

- 58 A truck will mix and pour concrete for the foundation of a new building. The volume of concrete in the truck is *most likely* measured in which units?
- A square feet
  - B meters
  - C cubic yards
  - D inches
- 59 There are 100 cm in 1 meter. What is one way to determine the number of cubic centimeters in 1 cubic meter?
- A multiply 100 by 100
  - B multiply 100 by 100 by 100
  - C add 100 + 100
  - D add 100 + 100 + 100
- 60 Mr. Kuo ordered sandwiches to serve at the school open house. He ordered 50 cheese, 35 vegetable, 40 ham, and 60 turkey sandwiches. The clean-up committee found 9 cheese, 5 vegetable, 6 ham, and 7 turkey sandwiches left over. According to the ratio of sandwiches left over to sandwiches ordered, which was the *most* popular type of sandwich?
- A ham
  - B turkey
  - C cheese
  - D vegetable
- 61 The Ryan family drove 900 miles on their vacation. They drove the same number of miles each day. They used 3 tanks of gas on the trip. Which expression should they use to find the number of miles they drove on 1 tank of gas?
- A  $1 \div 900$
  - B  $3 \div 900$
  - C  $900 \div 1$
  - D  $900 \div 3$

62 A train is traveling at a speed of 70 miles per hour. At this speed, what is the total number of miles the train will travel in 10 hours?

- A 7
- B 80
- C 700
- D 7,000

63 Jessica bought 4 pairs of socks. She paid \$2.39 for each pair. How much did she spend on the socks altogether?

- A \$1.61
- B \$1.67
- C \$6.39
- D \$9.56

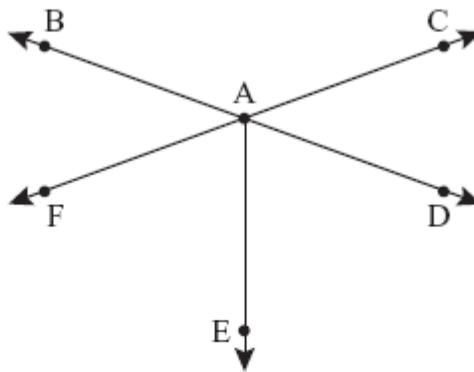
64 The number of students in Mrs. Gleason's class who buy lunch each day is shown below.

Monday:	10
Tuesday:	8
Wednesday:	10
Thursday:	8
Friday:	9

How much would the mean change if 14 students instead of 9 bought lunch on Friday?

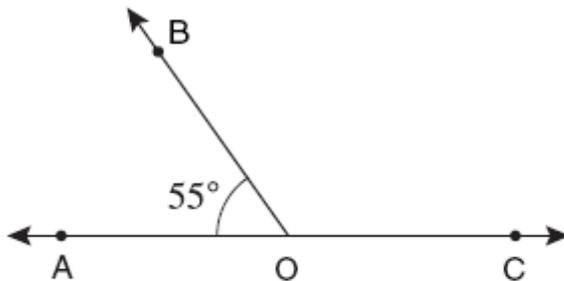
- A by 1 student
- B by 2 students
- C by 3 students
- D by 5 students

65 In the drawing, which of these pairs of angles appear to be vertical angles?



- A  $\angle BAF$  and  $\angle FAE$
- B  $\angle EAF$  and  $\angle EAD$
- C  $\angle BAC$  and  $\angle EAD$
- D  $\angle BAF$  and  $\angle CAD$

66  $\overleftrightarrow{AC}$  is a straight line. What is the measure of  $\angle BOC$ ?



- A  $45^\circ$
- B  $55^\circ$
- C  $125^\circ$
- D  $135^\circ$

- 67 Which of the following shapes is a quadrilateral that must have all sides congruent?
- A trapezoid
  - B rectangle
  - C square
  - D equilateral triangle
- 68 A cereal box in the shape of a rectangular prism is 7 inches long, 10 inches high, and 3 inches wide. What is the volume of the box in cubic inches?
- A 210 cu in.
  - B 420 cu in.
  - C 703 cu in.
  - D 2,100 cu in.
- 69 Jenny collected 345 milliliters of rain water. How many liters is 345 milliliters?
- 1 liter = 1,000 milliliters
- A 0.345 liter
  - B 3.45 liters
  - C 3,450 liters
  - D 345,000 liters
- 70 A group of boys ate 3 whole apple pies. If each boy ate exactly  $\frac{1}{4}$  of a pie, what was the total number of boys in the group?
- A 4
  - B 7
  - C 9
  - D 12

71 Brian and Allan are sharing a pizza. Brian ate  $\frac{1}{2}$  of the pizza and Allan ate  $\frac{1}{3}$  of the pizza. What fractional part of the pizza did they eat altogether?

A  $\frac{2}{5}$

B  $\frac{1}{6}$

C  $\frac{2}{6}$

D  $\frac{5}{6}$

72 Which fraction has the *same* meaning as  $5 \div 6$ ?

A  $\frac{5}{6}$

B  $\frac{6}{5}$

C  $5\frac{1}{6}$

D  $6\frac{1}{5}$

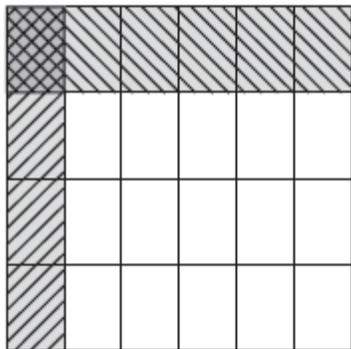
73 Pat needs to use  $\frac{3}{6}$  cup of sugar and  $\frac{2}{6}$  cup of flour to make a recipe. Which size measuring cups would hold these exact amounts?

- A  $\frac{1}{2}$  cup for the sugar and  $\frac{1}{3}$  cup for the flour
- B  $\frac{1}{3}$  cup for the sugar and  $\frac{1}{2}$  cup for the flour
- C  $\frac{6}{3}$  cups for the sugar and  $\frac{6}{2}$  cups for the flour
- D  $\frac{2}{3}$  cup for the sugar and  $\frac{1}{6}$  cup for the flour

74 Which expression shows the prime factorization of 36?

- A  $2 \times 2 \times 3 \times 3$
- B  $3 \times 3 \times 4$
- C  $4 \times 9$
- D  $1 \times 36$

75 What is the product of  $\frac{1}{4} \times \frac{1}{6}$  ?



- A  $\frac{1}{24}$
- B  $\frac{1}{9}$
- C  $\frac{2}{10}$
- D  $\frac{9}{15}$

76 Mitchell is making berry muffins. The recipe calls for  $\frac{3}{4}$  cup of blueberries,  $\frac{1}{3}$  cup of raspberries, and  $\frac{1}{4}$  cup of blackberries. How many cups of berries does he need?

A  $1\frac{1}{12}$  cups

B  $1\frac{1}{3}$  cups

C  $1\frac{5}{12}$  cups

D  $1\frac{1}{2}$  cups

77 Which value makes the equation below true?

$$\frac{1}{2} + \square = \frac{7}{6}$$

A  $\frac{1}{2}$

B  $\frac{2}{3}$

C  $\frac{6}{4}$

D  $\frac{7}{12}$

## Scoring Key: Part 1

Item No.	Correct Answer	GLCE	Type	Description
1	D	N.FL.05.04	Core-NC	Multiply a multi-digit number by a two-digit number
2	D	N.FL.05.04	Core-NC	Multiply a multi-digit number by a two-digit number
3	C	N.FL.05.04	Core-NC	Multiply a multi-digit number by a two-digit number
4	C	N.FL.05.06	Core-NC	Divide up to a 4-digit number by a two-digit number
5	B	N.FL.05.06	Core-NC	Divide up to a 4-digit number by a two-digit number
6	B	N.FL.05.06	Core-NC	Divide up to a 4-digit number by a two-digit number
7	A	N.ME.05.08	Core-NC	Understand the relative magnitude base-10 system
8	A	N.ME.05.08	Core-NC	Understand the relative magnitude base-10 system
9	C	N.ME.05.08	Core-NC	Understand the relative magnitude base-10 system
10	C	M.UN.05.04	Core-NC	Convert measurements within a given system
11	D	M.UN.05.04	Core-NC	Convert measurements within a given system
12	D	M.UN.05.04	Core-NC	Convert measurements within a given system

NC=Non Calculator

## Scoring Key: Part 2

Item No.	Correct Answer	GLCE	Type	Description
13	C	N.MR.05.01	Core	Understand the meaning of division of whole numbers
14	D	N.MR.05.01	Core	Understand the meaning of division of whole numbers
15	B	N.MR.05.01	Core	Understand the meaning of division of whole numbers
16	A	N.MR.05.02	Core	Know division of whole numbers in form $a = bq + r$
17	C	N.MR.05.02	Core	Know division of whole numbers in form $a = bq + r$
18	B	N.MR.05.02	Core	Know division of whole numbers in form $a = bq + r$
19	B	N.FL.05.05	Core	Solve problems involving $\times$ and $\div$ of whole numbers
20	B	N.FL.05.05	Core	Solve problems involving $\times$ and $\div$ of whole numbers
21	C	N.FL.05.05	Core	Solve problems involving $\times$ and $\div$ of whole numbers
22	B	M.PS.05.05	Core	Show relationships between areas of polygons
23	A	M.PS.05.05	Core	Show relationships between areas of polygons
24	A	M.PS.05.05	Core	Show relationships between areas of polygons
25	C	G.GS.05.02	Core	Measure angles with a protractor and classify
26	B	G.GS.05.02	Core	Measure angles with a protractor and classify
27	B	G.GS.05.02	Core	Measure angles with a protractor and classify
28	C	G.GS.05.05	Core	Know straight angle and angles surrounding a point
29	A	G.GS.05.05	Core	Know straight angle and angles surrounding a point
30	B	G.GS.05.05	Core	Know straight angle and angles surrounding a point
31	B	D.RE.05.01	Core	Read and interpret line graphs, and solve problems
32	D	D.RE.05.01	Core	Read and interpret line graphs, and solve problems
33	D	D.RE.05.01	Core	Read and interpret line graphs, and solve problems

## Scoring Key: Part 3

Item No.	Correct Answer	GLCE	Type	Description
34	D	N.ME.05.09	Core	Understand percentages as parts out of 100
35	D	N.ME.05.09	Core	Understand percentages as parts out of 100
36	D	N.ME.05.09	Core	Understand percentages as parts out of 100
37	C	N.FL.05.20	Core	Solve applied problems using fractions & decimals
38	C	N.FL.05.20	Core	Solve applied problems using fractions & decimals
39	A	N.FL.05.20	Core	Solve applied problems using fractions & decimals
40	C	N.MR.05.22	Core	Express fractions and decimals as percentages
41	C	N.MR.05.22	Core	Express fractions and decimals as percentages
42	B	N.MR.05.22	Core	Express fractions and decimals as percentages
43	B	M.TE.05.06	Core	Know how to use the area formula of a triangle
44	A	M.TE.05.06	Core	Know how to use the area formula of a triangle
45	B	M.TE.05.06	Core	Know how to use the area formula of a triangle
46	C	M.TE.05.07	Core	Know how to use area formula for a parallelogram
47	D	M.TE.05.07	Core	Know how to use area formula for a parallelogram
48	C	M.TE.05.07	Core	Know how to use area formula for a parallelogram
49	D	G.GS.05.06	Core	Know interior angles of a triangle & quadrilateral
50	C	G.GS.05.06	Core	Know interior angles of a triangle & quadrilateral
51	A	G.GS.05.06	Core	Know interior angles of a triangle & quadrilateral
52	A	D.AN.05.03	Core	Given set of data, find & interpret mean, mode
53	C	D.AN.05.03	Core	Given set of data, find & interpret mean, mode
54	C	D.AN.05.03	Core	Given set of data, find & interpret mean, mode
55	E	N.FL.05.18	Core-CR	Write statements involving + and - of fractions
56	E	D.RE.05.02	Core-CR	Construct line graphs from tables of data

## Scoring Key: Part 3 (continued)

Item No.	Correct Answer	GLCE	Type	Description
57	B	G.TR.05.01	Extended	Associate an angle with a certain amount of turning
58	C	M.UN.05.02	Extended	Know the units of measure of volume
59	B	M.UN.05.03	Extended	Compare relative sizes of cubic measures
60	B	N.ME.05.23	Extended	Express ratios in the forms a to b, a:b, a/b
61	D	N.MR.05.03	Extended	Write mathematical statements involving division
62	C	N.MR.05.15	Extended-NC	x a whole number by powers of 10, identify patterns
63	D	N.MR.05.17	Extended-NC	Multiply decimals to 100ths by whole numbers
64	A	D.AN.05.04	Future	Solve multi-step problems involving means
65	D	G.GS.05.03	Future	Identify angles on a straight line & vertical angles
66	C	G.GS.05.04	Future	Find unknown angles in problems
67	C	G.GS.05.07	Future	Find unknowns using properties of triangles, quads.
68	A	M.PS.05.10	Future	Solve volume problems of rectangular prisms
69	A	M.UN.05.01	Future	Know equivalence of 1 liter, 1000 ml and 1000 cc
70	D	N.MR.05.13	Future-NC	Divide using fractions and whole numbers
71	D	N.FL.05.14	Future-NC	Add and subtract fractions with unlike denominators
72	A	N.ME.05.10	Future	Understand & show fractions as a statement of $\div$
73	A	N.ME.05.11	Future	Compare two fractions using common denominators
74	A	N.MR.05.07	Future	Find prime factorization of #s, show exponentially
75	A	N.ME.05.12	Future-NC	Multiply two unit fractions using area model
76	B	N.MR.05.19	Future	Solve contextual problems involving +/- fractions
77	B	N.MR.05.21	Future	Solve for the unknown in equations with fractions