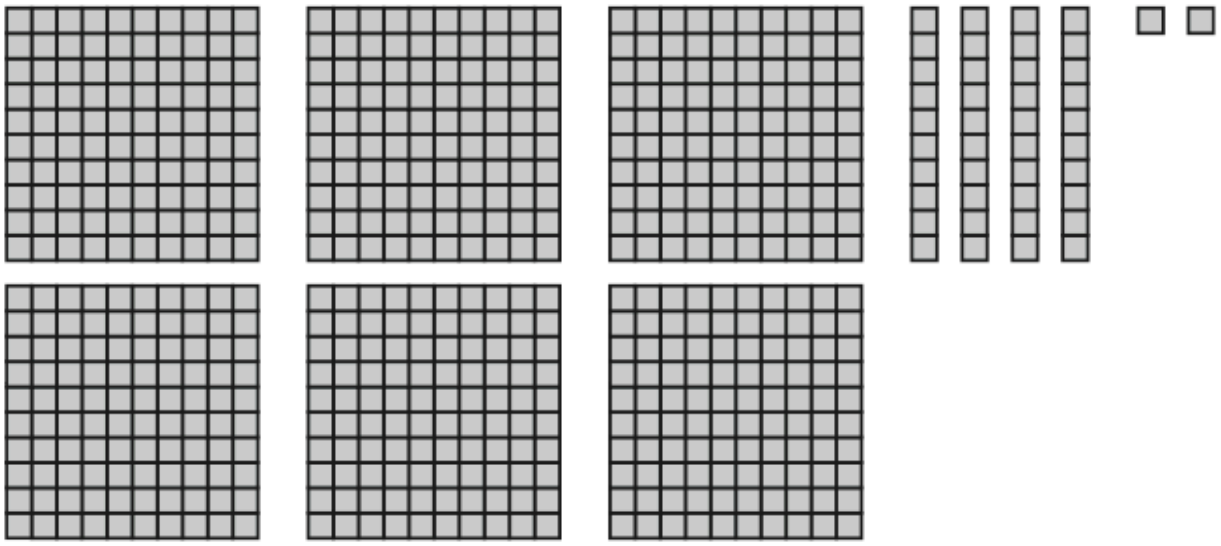
Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Grade 5 Test Specs

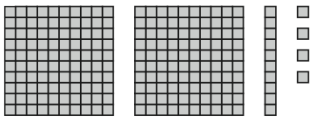
Multiple Choice
Identify the choice that best completes the statement or answers the question.

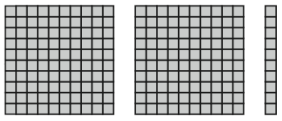
____ 1. Ella needs to sort the base ten blocks shown below into 3 equal groups.

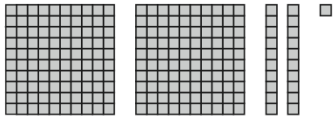
Ella's Base Ten Blocks

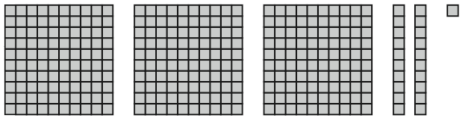


Which model could represent one of the groups of base ten blocks?

a. 

b. 

c. 

d. 

____ 2. Joseph wanted to sell roses for a fundraiser. He placed 156 roses into 12 vases. The expression below can be used to determine the total number of roses he placed into each vase

$$156 \div 12$$

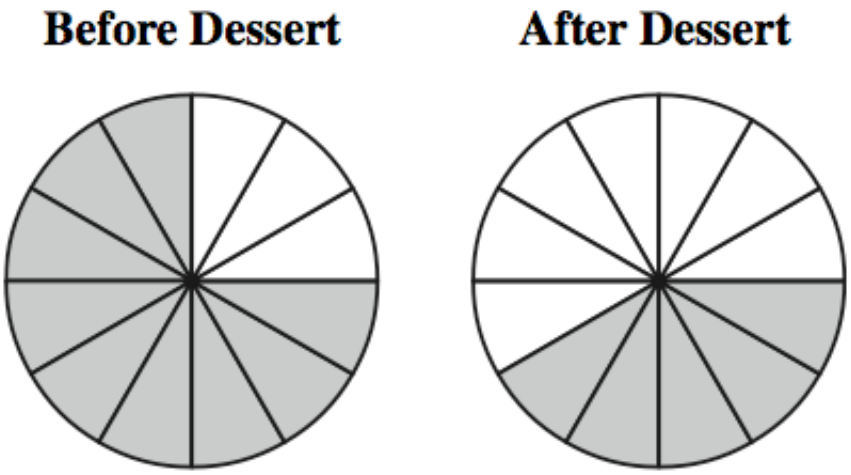
Which of the following is equivalent to the above expression?

a. $(156 \div 10) + (156 \div 2)$
b. $(15 \div 10) + (6 \div 2)$
c. $(12 \div 12) + (36 \div 12)$
d. $(120 \div 12) + (36 \div 12)$

____ 3. In our galaxy, a star is formed every 18 days. There are 365 days in 1 year. Based on these numbers, which is closest to the total number of stars formed in our galaxy in 1 year?

a. 18
b. 19
c. 20
d. 21

____ 4. Mrs. Bradford served part of a pie for dessert. The shaded parts of the pictures below show how much of the pie was in the pie plate before and after dessert.



What fraction of the whole pie, expressed in lowest terms, was eaten for dessert?

a. $\frac{1}{3}$
b. $\frac{5}{12}$
c. $\frac{7}{12}$
d. $\frac{3}{4}$

____ 5. Some of the ingredients for a chocolate chip cookie recipe are shown below.

$\frac{1}{2}$ cup butter
$\frac{2}{3}$ cup sugar
$1\frac{1}{8}$ cups flour

What is the minimum capacity of a bowl that can hold the total of all three of these ingredients?

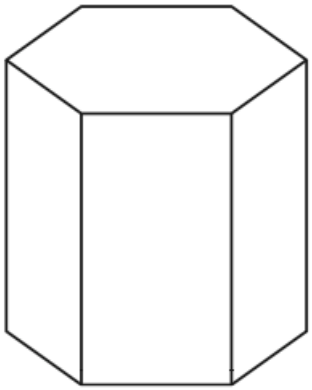
a. $1\frac{1}{6}$ cups
b. $1\frac{4}{13}$ cups
c. $2\frac{1}{7}$ cups
d. $2\frac{7}{24}$ cups

____ 6. Which of the following shows the prime factorization of 24?

a. $2 \times 3 \times 4$
b. $2^3 \times 3$
c. $4^2 \times 3$
d. 4×6

____ 7. Penelope has an aquarium in the shape of a hexagonal prism. The front view of a hexagonal prism is shown below.

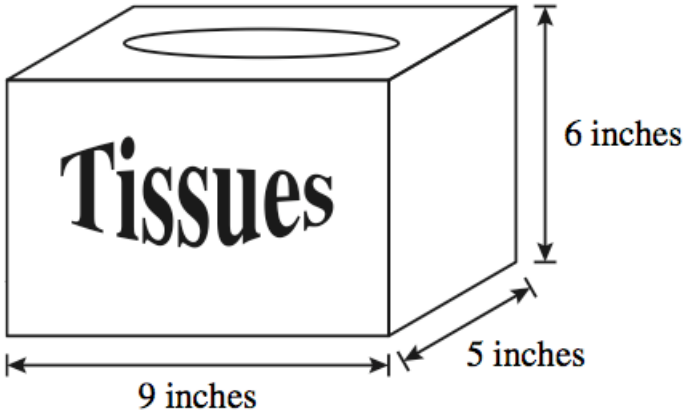
Top-Front View of a Hexagonal Prism



Which of the following are the correct numbers of faces, edges, and vertices in a hexagonal prism?

a. 4 faces, 13 edges, 10 vertices
b. 8 faces, 13 edges, 10 vertices
c. 6 faces, 18 edges, 12 vertices
d. 8 faces, 18 edges, 12 vertices

____ 8. A box of tissues is in the shape of a rectangular prism with the dimensions shown below.



What is the volume of the box of tissues?

a. 258 square inches
b. 258 cubic inches
c. 270 square inches
d. 270 cubic inches

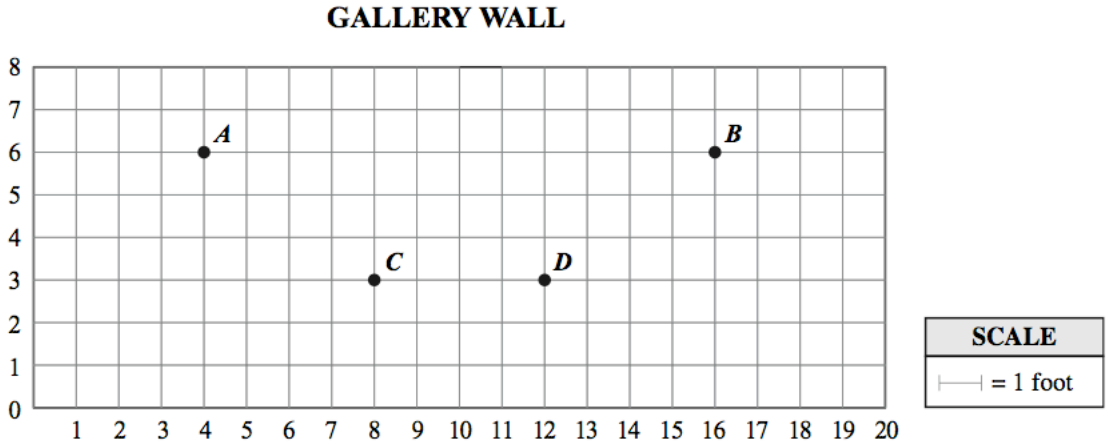
____ 9. Mrs. Jackson purchased two identical jackets for her twin sons from an online store. The cost for shipping was $1, and the total amount Mrs. Jackson paid was $87. The equation below can be used to find j, the price for one jacket.

$$2j + 1 = 87$$

What was the price, in dollars, of one jacket?

a. 43
b. 44
c. 172
d. 176

____ 10. The letters on the coordinate grid below represent the locations of paintings hanging on a wall of an art gallery.

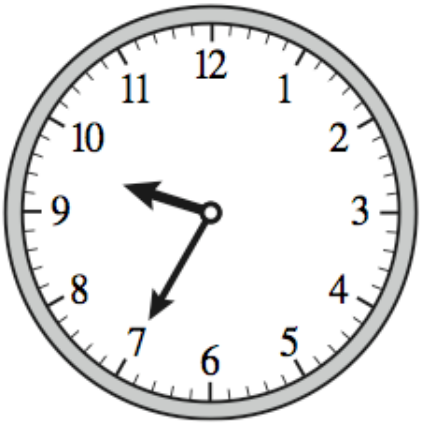


The manager wants to hang another painting exactly halfway between points A and B. Which ordered pair best describes the location of the new painting?

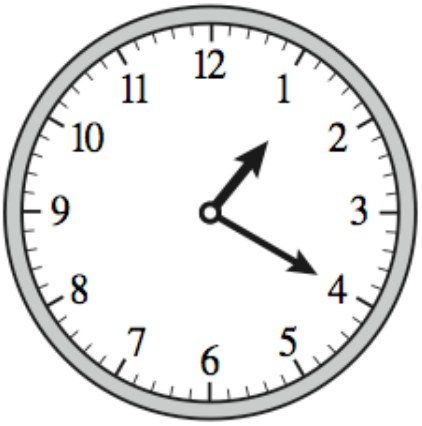
a. (6, 10)
b. (10, 3)
c. (10, 6)
d. (11, 6)

____ 11. The students in Mrs. Zavala's fifth-grade class went on a field trip to the zoo. They arrived at the zoo in the morning and left the zoo in the afternoon. The clocks below show the time when the class arrived at the zoo and the time the class left the zoo.

Time Mrs. Zavala's Class Arrived at the Zoo



Time Mrs. Zavala's Class Left the Zoo



Based on the times shown, for how long was Mrs. Zavala's class at the zoo?

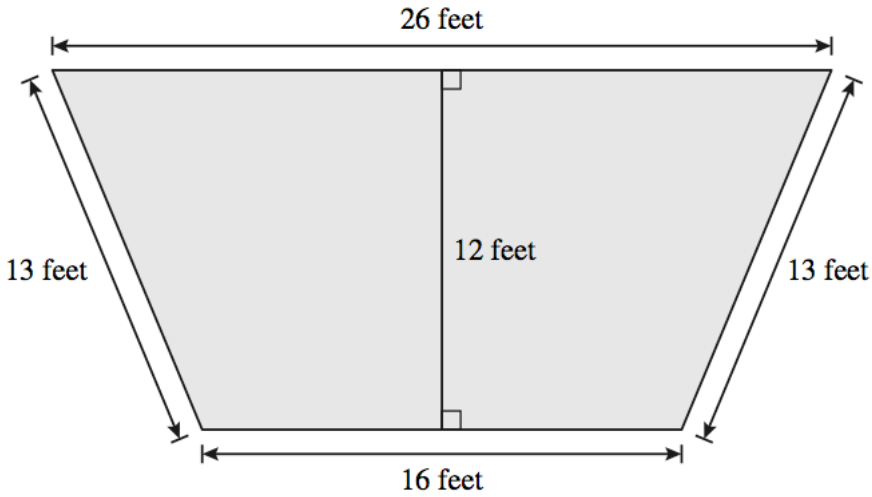
a. 3 hours 15 minutes
b. 3 hours 45 minutes
c. 4 hours 15 minutes
d. 4 hours 45 minutes

____ 12. A carpenter is measuring the width of a window in a house. Which of the following methods would provide him with the most precise measurement?

a. He should measure the width of the window to the nearest foot.
b. He should measure the width of the window to the nearest inch
c. He should measure the width of the window to the nearest $\frac{1}{4}$ foot.
d. He should measure the width of the window to the nearest $\frac{1}{2}$ inch.

____ 13. A drama teacher drew up plans for a stage he wants to build. A diagram of the top of the stage, which is in the shape of a trapezoid, is shown below.

Top View of Stage Design



Which is the area of the top of the stage?

a. 68 square feet
b. 80 square feet
c. 252 square feet
d. 504 square feet

____ 14. Ywonne needed to evaluate the expression shown below using the order of operations.

$$54 \div (9 - 3) + 1 \times 6$$

What is the value of the above expression?

a. 8
b. 15
c. 20
d. 50

____ 15. In one day, Sam and his family drove from Bakersfield, California, to Death Valley, California. The elevation in Bakersfield is 408 feet above sea level, and the elevation in Death Valley is 282 feet below sea level. What is the difference in elevation between these two places?

a. 126 feet
b. 282 feet
c. 680 feet
d. 690 feet

____ 16. The table below shows the lowest recorded temperature for four states in the U.S. as of December 2007.

LOWEST RECORDED TEMPERATURES

State	Temperature (in °F)
Delaware	-17
Florida	-2
Hawaii	12
Mississippi	-19

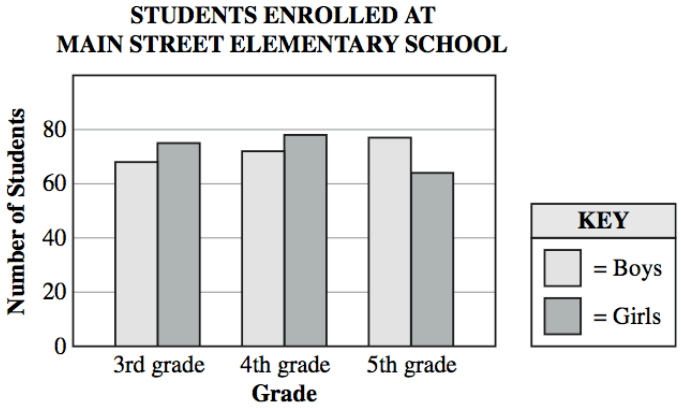
Which of these lists the temperatures shown in the table in order from **lowest to highest**?

a. -2, 12, -17, -19
b. -19, -17, -2, 12
c. 12, -2, -17, -19
d. -2, -17, -19, 12

____ 17. A discount music store sells compact discs (CDs) for $6 each. When a customer purchases 3 CDs, the customer receives 1 free CD. Marisa went to the music store and spent $36 on CDs. How many free CDs did Marisa receive?

a. 1
b. 2
c. 6
d. 8

____ 18. The graph below shows the number of boys and girls enrolled in three grades at Main Street Elementary School.



Based on the graph, which of the following statements is true about the enrollment at Main Street Elementary School?

a. The total number of 4th grade students is approximately 70.
b. The total number of 5th grade students is approximately 140.
c. The number of 4th grade boys is less than the number of 3rd grade boys.
d. The number of 5th grade girls is greater than the number of 5th grade boys.

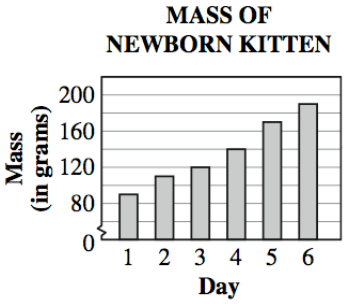
____ 19. A veterinarian measured the mass of a newborn kitten each day for 6 days. The results are shown in the table below.

MASS OF NEWBORN KITTEN

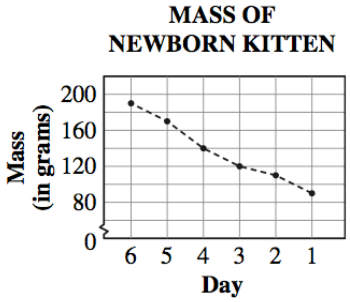
Day	1	2	3	4	5	6
Mass (in grams)	90	110	120	140	170	190

Which graph is the best representation of the data in the table?

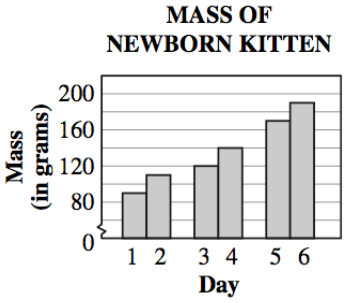
a.



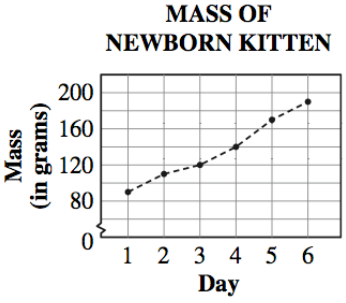
c.



b.



d.



Essay

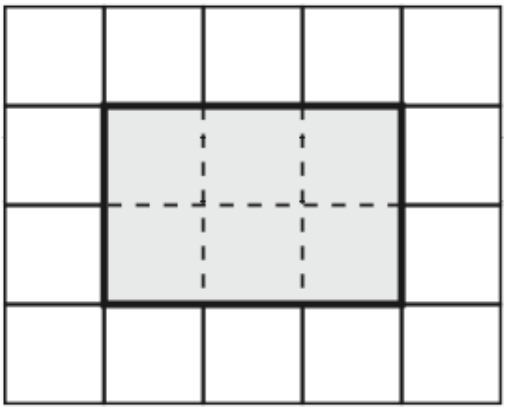
20. The fifth grade teachers at a school are renting buses to take their students on a field trip. There will be 5 teachers and 143 students going on the trip. Each bus can hold a maximum of 35 people.

Part A In the space below, write a division problem that can be used to determine the minimum number of buses the teachers must rent so that everyone will be able to go on the field trip.

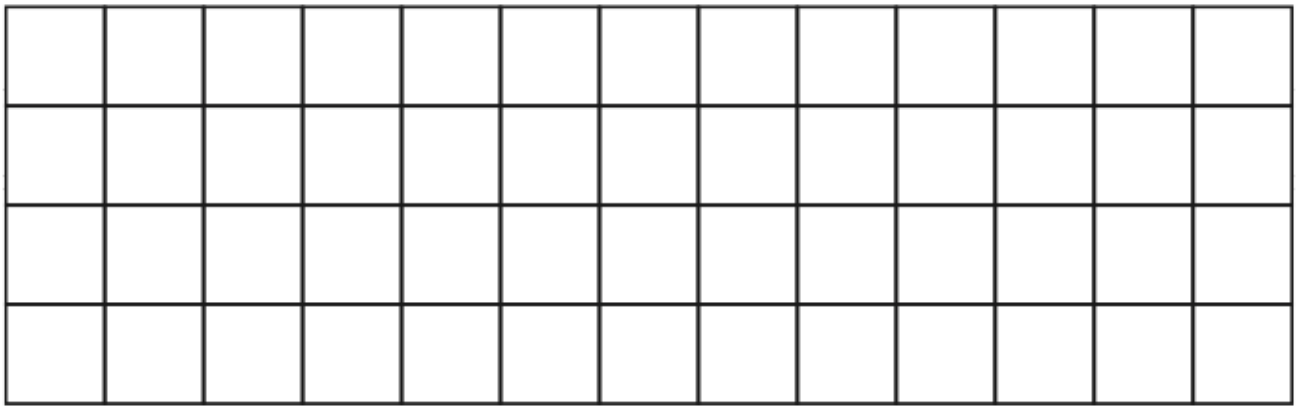
Part B Solve the division problem you wrote in ***Part A***. What is the minimum number of buses the teachers must rent for everyone to be able to go on the field trip? In the space below, show your work and explain your answer.

Minimum number of buses needed _____

21. The shaded figure on the grid below represents the number 1.



Part A Using the figure shown, draw a representation of the expression $1\frac{2}{3}+\frac{1}{2}$.

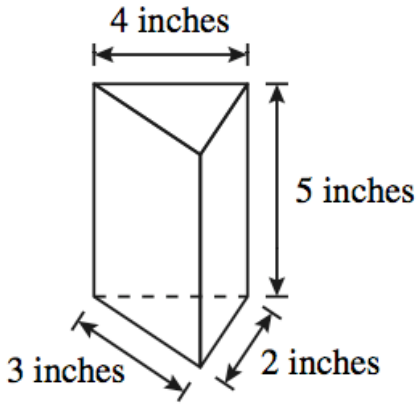


Part B Using the representation you drew in ***Part A***, fidn the value of $1\frac{2}{3}+\frac{1}{2}$. In the space below, show your work, or explain your answer. Write your answer in simplest form.

$1\frac{2}{3}+\frac{1}{2}=$ _____

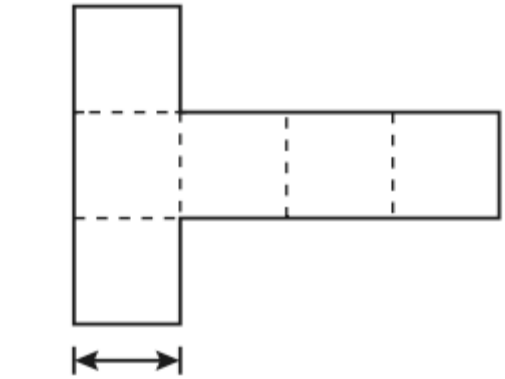
22. Mr. Bruno bought two types of fruit. He bought $5\frac{5}{8}$ pounds of apples and $4\frac{1}{2}$ pounds of grapefruit. Mr. Bruno has a scale that can display a maximum weight of 10 pounds. Use mathematical terms to explain whether or not Mr. Bruno's scale will be able to display the total weight of the fruit. Show or explain your work in the space below.

23. Keira wants to make a triangular prism like the one shown below.

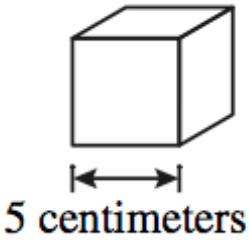


Keira will cut each face of the prism from construction paper. In the space below, draw all the shapes Keira will need to cut from the construction paper. Include the lengths of the sides, in inches, of each shape.

24. Marcella cut the net shown below on a sheet of graph paper.



Marcella folded the paper on the dashed lines to create the cube shown below.



Calculate the surface area of the cube Marcella created. In the space below, show or explain how you determined your answer and make sure your answer includes appropriate units.

Surface area of cube _____

25. Both Mrs. Carmen and Mr. Davis worked the same total number of hours on the weekend. Mrs. Carmen worked 5 hours on Saturday and 7 hours on Sunday. Mr. Davis worked 8 hours on Saturday.

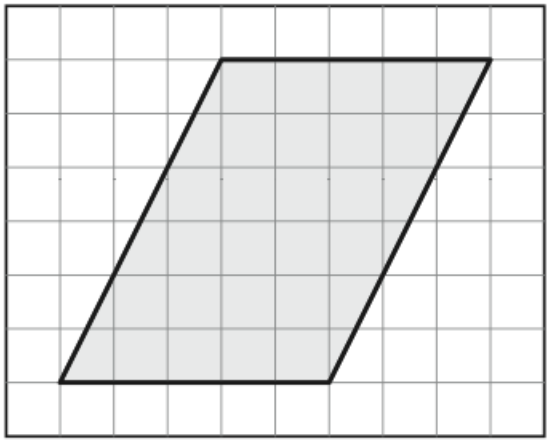
Part A Write an equation to represent this situation. Let d represent the number of hours Mr. Davis worked on Sunday.

Equation_____

Part B Use your equation to find the number of hours Mr. Davis worked on Sunday. Show all your work.

Mr. Davis worked_____ hours on Sunday

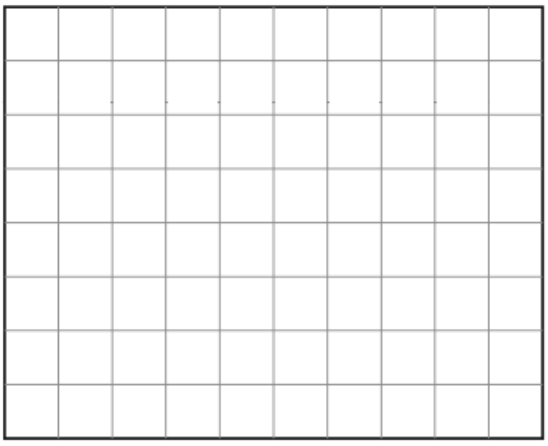
26. Diane drew a parallelogram on a grid, as shown below.



SCALE
☐ = 1 square centimeter

Part A Draw 1 line on the parallelogram above to make 2 figures which can then be used to form a rectangle.

Part B On the grid below, draw the rectangle you can form from the 2 figures in Part A. Show or explain how you can determine the area of the parallelogram and write the area of the parallelogram on the line provided.



SCALE
☐ = 1 square centimeter

Area of parallelogram_____square centimeters

27. Matthew has a jar of quarters. In June, Matthew added and removed quarters from the jar.

- Each afternoon, from June 1 through June 30, Matthew added $1.00 (in quarters) to the jar.
- On June 7, Matthew removed $1.75 from the jar.
- On June 15, Matthew removed $3.25 from the jar.
- On June 29, Matthew removed $2.50 from the jar.

If the value of the quarters in the jar was exactly $40.00 on the evening of June 30, find the value of the quarters in the jar on the morning of June 1. In the space below, show or explain your work.

Total value of quarters in the jar on the morning of June 1_____

28. Ramon did a science experiment on evaporation. He filled a glass with water and put it on the windowsill. At the same time each day, he measured the height of the water in the glass.

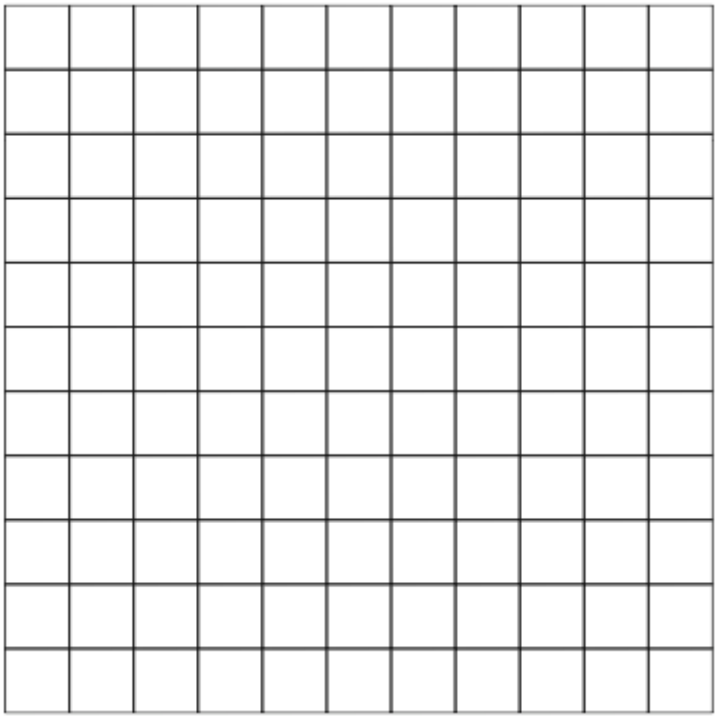
Ramon made a table of his data as shown below.

MEASUREMENT OF WATER EVAPORATION

Day	Height of Water (in centimeters)
1	10.0
2	9.5
3	9.0
4	
5	8.0

The height of water is missing for Day 4. Based on the information in the table, find the height of the water for Day 4. On the grid below, make a line graph showing all the data in the table and the height of water for Day 4. Be sure to:

- title the graph
- label the axes
- accurately graph all the data
- use an appropriate scale

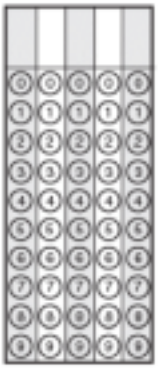


Other

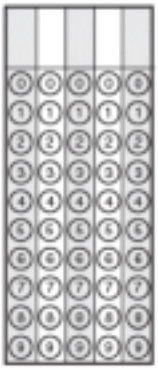
29. Marcy's teacher wrote the division problem shown below, using two shapes to represent missing digits.

$$
\begin{array}{r}
35\square \\
1\triangle\overline{)5616} \\
-48 \\
\hline
81 \\
-80 \\
\hline
16 \\
-16 \\
\hline
0
\end{array}
$$

What value can replace the ☐ in the quotient to correctly complete the division problem shown above?

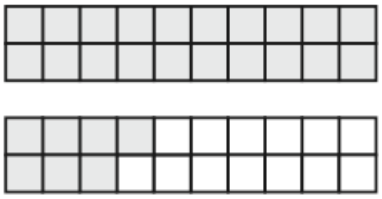


30. A cafeteria manager baked 500 cupcakes for a school carnival and is placing them in boxes. Each box holds 24 cupcakes. What is the least number of boxes the cafeteria manager will need to hold all 500 cupcakes?

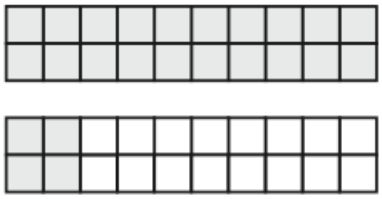


31. Both Alex and Stephanie have some coins in their pockets. The shaded areas in the diagrams below represent the value of the coins they have.

Value of Alex's Coins



Value of Stephanie's Coins



KEY
☐ = $0.05

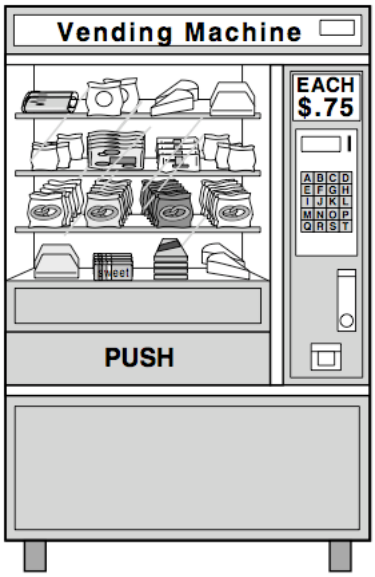
What is the total value, in dollars, of the coins that Alex and Stephanie have?

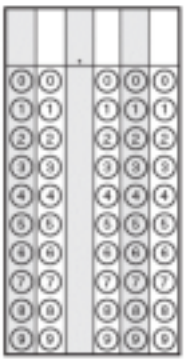
$.

32. Mindy went hiking on a trail that has a total length of 3.5 miles. After she had hiked 1.98 miles, she stopped for lunch. After lunch, Mindy will continue hiking until she reaches the end of the trail. How much farther, **in miles**, will Mindy need to hike after lunch?

.

33. The vending machine shown below can hold up to 24 bags of pretzels. Each bag contains 1 ounce of pretzels. What is the total number of pounds of pretzels in 24 bags of this size?

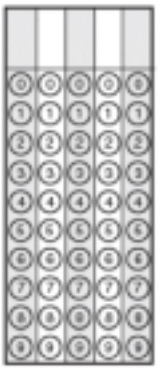




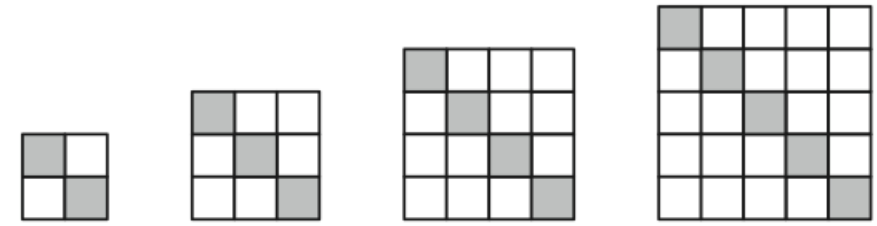
34. The value of the expression below is equal to the distance, in feet, between a ball and the ground, 2 seconds after the ball is dropped from a height of 75 feet.

$$75 - 16 \times 2^2$$

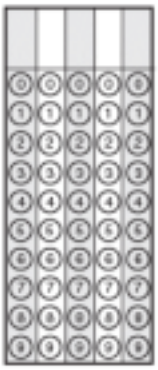
What is the value of this expression?



35. Pedro used white and gray square tiles to make models of some floor designs. The first 4 floor designs are shown below.



If Pedro continues making these floor designs, what will be the total number of gray tiles in the 100th floor design?



Grade 5 Test Specs
Answer Section

MULTIPLE CHOICE

1.	ANS: A	PTS: 1	STA: MA.5.A.1.1
2.	ANS: D	PTS: 1	STA: MA.5.A.1.1
3.	ANS: C	PTS: 1	STA: MA.5.A.1.4
4.	ANS: A	PTS: 1	STA: MA.5.A.2.1
5.	ANS: D	PTS: 1	STA: MA.5.A.2.2
6.	ANS: B	PTS: 1	STA: MA.5.A.2.4
7.	ANS: D	PTS: 1	STA: MA.5.G.3.1
8.	ANS: D	PTS: 1	STA: MA.5.G.3.2
9.	ANS: A	PTS: 1	STA: MA.5.A.4.1
10.	ANS: C	PTS: 1	STA: MA.5.G.5.1
11.	ANS: B	PTS: 1	STA: MA.5.G.5.2
12.	ANS: D	PTS: 1	STA: MA.5.G.5.3
13.	ANS: C	PTS: 1	STA: MA.5.G.5.4
14.	ANS: B	PTS: 1	STA: MA.5.A.6.2
15.	ANS: D	PTS: 1	STA: MA.5.A.6.3
16.	ANS: B	PTS: 1	STA: MA.5.A.6.4
17.	ANS: B	PTS: 1	STA: MA.5.A.6.5
18.	ANS: B	PTS: 1	STA: MA.5.S.7.1
19.	ANS: D	PTS: 1	STA: MA.5.S.7.2

ESSAY

20. ANS:

Example of a Top-Score Response

Part A

The student should add the 5 and the 143 to get 148, and set up a division problem or equation showing 148 35.

Part B The division problem in Part A should be solved showing a quotient of 4 and a remainder of 8. The student should show or explain that 5 buses are needed, since there will be 4 full buses with 8 people left over.

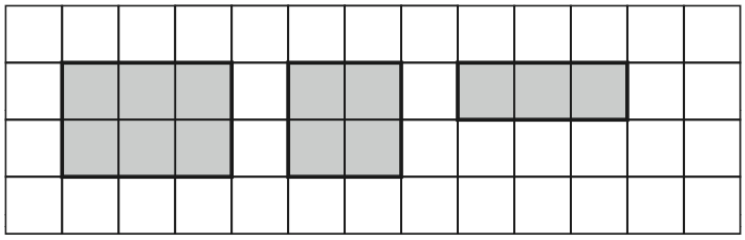
AND

Minimum number of buses needed 5

PTS: 2 STA: MA.5.A.1.4

21. ANS:
Example of a Top-Score Response

Part A A darwing similar to the following:



Part B Work or explanation showing that the $\frac{2}{3}$ and $\frac{1}{2}$ can be converted to $\frac{4}{6}$ and $\frac{3}{6}$, making the total value of the expression equal to $2\frac{1}{6}$.

Value of expression: $2\frac{1}{6}$

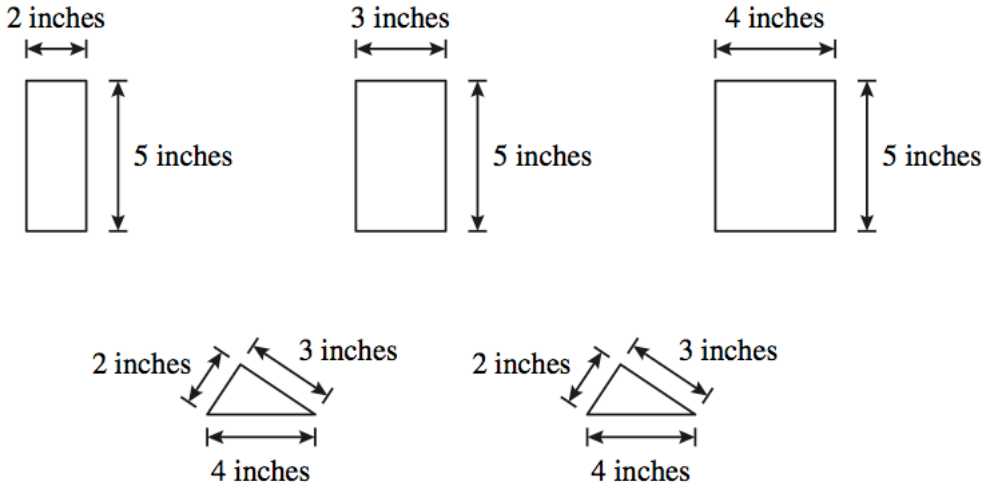
PTS: 2 STA: MA.5.A.2.1

22. ANS:
The student provides work and/or explanation that the sum of $5\frac{5}{8}$ and $4\frac{1}{2}$ is $10\frac{1}{8}$ so Mr. Bruno's scale will not be able to display the total weight of the fruit.

PTS: 2 STA: MA.5.A.2.2

23. ANS:
Example of a Top-Score Response

The response should include the five shapes shown below with measurements included. Shapes need not be drawn to scale.



PTS: 2 STA: MA.5.G.3.1

24. ANS:
Example of a Top-Score Response

Response shows that the area of one square face is 5×5 square centimeters, and the total area of all faces is $25 \times 6 = 150$ square centimeters.

AND

Surface area of the cube 150 square centimeters

PTS: 2 STA: MA.5.G.3.2

25. ANS:
Example of a Top-Score Response

Part A An equation similar to 5 7 8 d.
Part B The equation is solved to show that d 4.

AND

Mr. Davis worked__4___ hours on Sunday

PTS: 2 STA: MA.5.A.4.1

26. ANS:
Example of a Top-Score Response

The student draws a vertical line through the parallelogram and draws a rectangle on the blank grid with a base of 5 centimeters and a height of 6 centimeters.

The student may include a diagonal line in the rectangle to show the two pieces.

AND

The student explains that the area of the parallelogram is equal to the area of the rectangle, and the area of the rectangle is 30 square centimeters. The student may show that $6 \times 5 = 30$ or the student may indicate that there are 30 squares inside the rectangle.

AND

Area of parallelogram 30 ***square centimeters***

PTS: 2 STA: MA.5.G.5.4

27. ANS:
Example of a Top-Score Response

The response shows valid work and may indicate a valid problem-solving strategy, such as working backward or guess, check, and revise. Work should be similar to the following.

Matthew added $30 \times \$1 = \$30$ to the jar during June.
Matthew removed $\$1.75 + \$3.25 + \$2.50 = \$7.50$ from the jar during the month of June.
the jar contained $\$40.00 - \$30.00 + \$7.50 = \$17.50$

AND

Total value of quarters in the jar on the morning of June 1 $17.50

PTS: 2 STA: MA.5.A.6.5

28. ANS:
Example of a Top-Score Response

The response includes a value in the table of 8.5 for Day 4, with an explanation that the height of the water decreases by 0.5 centimeters each day. The student creates a line graph, which includes an appropriate title, appropriate labels for the axes, accurate and consistent scales on the axes, and all data from the table correctly graphed, including the data for Day 4.

PTS: 2 STA: MA.5.S.7.1

OTHER

29. ANS:
1

PTS: 1 STA: MA.5.A.1.1

30. ANS:
21

PTS: 1 STA: MA.5.A.1.4

31. ANS:
2.55

PTS: 1 STA: MA.5.A.2.1

32. ANS:
1.52

PTS: 1 STA: MA.5.A.2.2

33. ANS:
1.5

PTS: 1

34. ANS:
11

PTS: 1

35. ANS:
101

PTS: 1 STA: MA.5.A.6.5