

Mathematics Assessment Quick Guide



Measurements of Student Progress Grade 6

2006 Mathematics Released Items

- 2** Iggy, the class lizard, lost his tail. The class found that Iggy's tail grows $\frac{1}{4}$ inch each week.

How many weeks will it take Iggy's new tail to grow 5 inches?

Show your work using words, numbers, and/or pictures.

How many weeks will it take Iggy's new tail to grow 5 inches? _____

2007 Mathematics Released Items

4 Annika has joined the Navy. She has offered to give either 25% or $\frac{6}{15}$ of her CD collection to her sister, Mitzi, whichever Mitzi chooses. Mitzi wants as many CDs as possible.

- Decide whether Mitzi should choose 25% or $\frac{6}{15}$ of the CDs.
- Use the results of your work to support your choice.

Show all your work to support your choice using words, numbers, and/or pictures.

Should Mitzi choose 25% or $\frac{6}{15}$ of the CDs? _____

- 9 Gunnar put a fence around a rectangular area that was 6 feet by 12 feet. The fence cost \$1.50 for each foot.

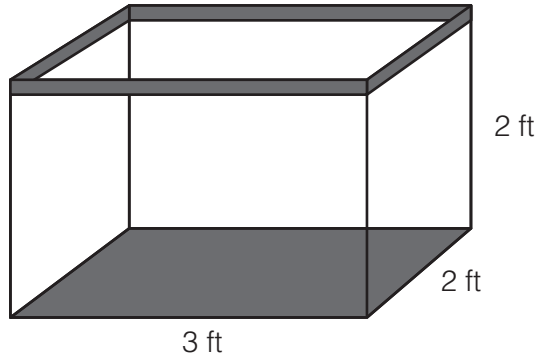
What was the total cost of the fence?

- A. \$27.00
- B. \$36.00
- C. \$54.00
- D. \$108.00

Key: C

Mathematics

- 16** Miss Baker bought a fish tank for her class.



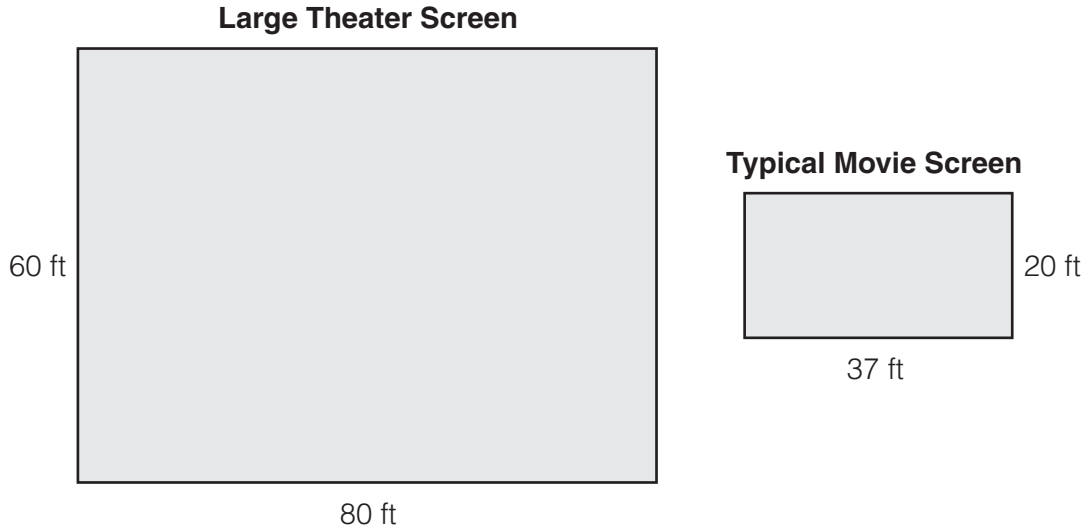
What is the volume of water the fish tank will hold when filled to the top?

- A.** 6 cubic feet
- B.** 7 cubic feet
- C.** 12 cubic feet
- D.** 24 cubic feet

Key: C

Mathematics

- 20** Keaneau and his father went to a movie at their local theater. Their local theater has a large theater screen that is much bigger than the typical movie screen.



What is the ratio of the area of the large theater screen to the area of the typical movie screen?

Show your work using words, numbers, and/or pictures.

What is the ratio of the area of the large theater screen to the area of the typical movie screen? _____

Mathematics

- 30** Juan earned \$48.00 last week delivering papers including \$6.00 in tips. He delivered the paper 7 days last week.

Let d = Juan's daily wage.

Which equation represents Juan's earnings for the week?

- A.** $6d + 48 = 7$
- B.** $6d + 7 = 48$
- C.** $7d + 6 = 48$
- D.** $7d + 48 = 6$

Key: C

- 31** Maria is making 6 badges. Each badge uses $4\frac{1}{2}$ inches of ribbon. She wants to buy the exact amount of ribbon needed to make the badges.

How much ribbon should she buy?

- A.** $\frac{1}{2}$ yard
- B.** $\frac{2}{3}$ yard
- C.** $\frac{3}{4}$ yard
- D.** $\frac{5}{6}$ yard

Show your work using words, numbers, and/or pictures.

Mathematics

- 34** When Wanda went to summer camp, she took \$50.00 spending money that she had earned doing yard work. She purchased a camp T-shirt for \$16.50.

What percent of Wanda's original amount does she have **left**?

- A.** 16%
- B.** 33%
- C.** 67%
- D.** 84%

Key: C

- 35** Owl Park School is planning a talent show. Each student performance lasts the same amount of time.

Let t = the total time for the show in minutes.

Let s = the number of students performing.

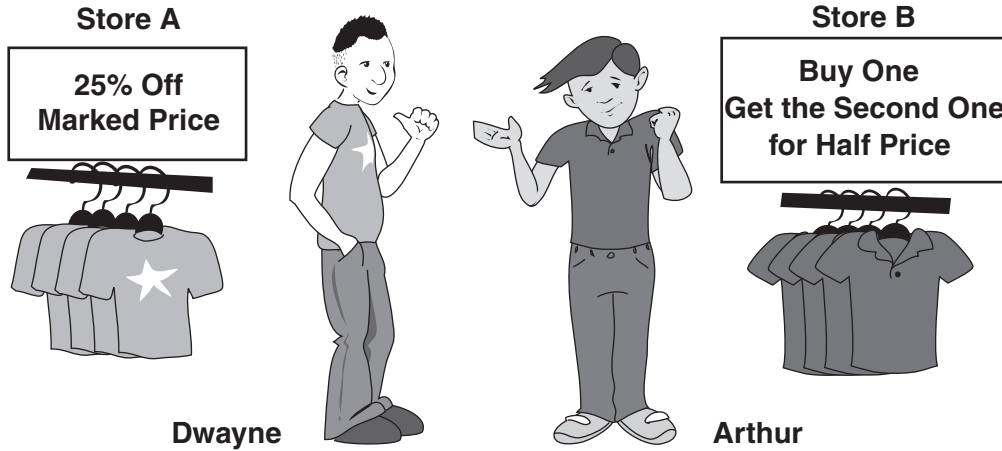
Which expression can be used to find the length of time each student performs?

- A.** $t + s$
- B.** $t - s$
- C.** $t \circ s$
- D.** $t \div s$

Key: D

Mathematics

40 Arthur and Dwayne were shopping for school clothes. Dwayne bought two shirts from Store A and Arthur bought two shirts from Store B.



Shirts on both racks had a marked price of \$20. Arthur claimed he paid less for his two shirts than Dwayne paid for his two shirts.

- Determine how much Dwayne paid for his two shirts after the discount.
- Determine how much Arthur paid for his two shirts after the discount.
- Write a statement to support whether Arthur’s claim was correct using evidence from the situation.

Show your work using words, numbers, and/or pictures.

<p>How much did Dwayne pay for his two shirts after the discount? _____</p> <p>How much did Arthur pay for his two shirts after the discount? _____</p>

- 41** Mrs. Hattori bought weekly lunch tickets for each of her **three** children. Weekly lunch tickets cost \$7.50 each.

One week, Mrs. Hattori paid for the lunch tickets with a fifty-dollar bill.

What is the correct change she should receive from the fifty-dollar bill?

- A.** \$42.50
- B.** \$38.50
- C.** \$32.50
- D.** \$27.50

Key: D

2006 Mathematics Released Items

1 Marlene organized a bike-a-thon to raise money for a local charity. She made the following report about the money raised:

- ◆ 80% went directly to the charity.
- ◆ 15% was spent on advertising and supplies.
- ◆ 5% was used to purchase award ribbons.

The bike-a-thon raised a total of \$500.

How much money went to each category?

Show your work to support your answers using words, numbers, and/or pictures.

How much money went to charity? _ \$ _____
How much money went to advertising and supplies? _ \$ _____
How much money went to award ribbons? _ \$ _____

2007 Mathematics Released Items

- 3** Tim and his two sisters decided to send a gift to their older brother in the army. The cost of mailing was \$0.37 for the first ounce and \$0.23 for each additional ounce. The package weighed one pound. How much did it cost to mail the gift?
- A. \$3.45
- B. \$3.68
- C. \$3.82
- D. \$5.92

Item Information for item number 3

Score Points: 1

Tools: Y

Strand and Target MC01 (Connect within Mathematics): Apply concepts and procedures from two or more of the mathematics content strands in a given problem or situation; relate and use different mathematical models and representations of the same situation (5.1.1, 5.1.2)

Performance Data

(Use this space to fill in student performance information for your school and district.)

Percent Distribution			
School	District	State	Responses (* = correct response)
		12.9%	A
		18.8%	B
		60.1%	C*
		7.5%	D
		0.8%	NR

2008 Mathematics Released Items

1 Look at the set of numbers below.

0.5 0.26 0.315 0.4030

Which number should be moved so that all the numbers will be in the correct order from least to greatest?

- A. 0.5
- B. 0.26
- C. 0.315
- D. 0.4030

Item Information

Score Points: 1

Tools: X

Strand and Target NS01 (Number and Numeration): Demonstrate understanding of the concepts and symbolic representations of rational numbers including integers; demonstrate understanding of the relative values of rational numbers including integers; use properties of addition and multiplication with non-negative rational numbers; demonstrate understanding of the additive inverse property with integers (1.1.1, 1.1.2, 1.1.3)

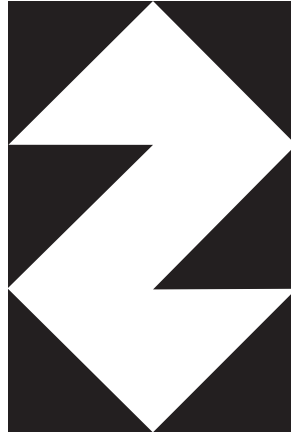
Performance Data

(Use this space to fill in student performance information for your school and district.)

Percent Distribution			
School	District	State	Responses (* = correct response)
		67.2%	A*
		11.3%	B
		5.7%	C
		15.0%	D
		0.9%	NR

2008 Mathematics Released Items

- 3 Super Quilters club members are making a quilt that includes their logo. The logo is a simple black-and-white design.



What fractional part of their logo is white?

- A. $\frac{1}{7}$
- B. $\frac{3}{9}$
- C. $\frac{6}{9}$
- D. $\frac{6}{12}$

2008 Mathematics Released Items

- 4 Four students are asked to solve the following problem:

$$3 + 5 \times 4 - 2 \times (7 - 2)$$

Rochelle says the answer is 13.

Mary says the answer is 65.

Preston says the answer is 80.

Toby says the answer is 150.

Tell which student is correct. Clearly explain or show how you found your answer.

Which student is correct? _____

2008 Mathematics Released Items

- 4 Four students are asked to solve the following problem:

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Preston says the answer is 80.

Toby says the answer is 150.

Tell which student is correct. Clearly explain or show how you found your answer.

$\begin{array}{r} 3 + 5 \times 4 - 2 \times (7 - 2) \\ 3 + 5 \times 4 - 2 \times 5 \\ 3 + 20 - 10 \\ 23 - 10 \\ 13 \end{array}$
13 is the correct answer because you
do whats in the perenthese first, then
you do the multiplication, then addition
and last you do 80 subtraction.
Which student is correct? <u>Rochelle</u>

Annotation for example 2-point response:

The student shows understanding of computing using order of operations by writing “Rochelle” and showing work that uses order of operations to support the answer. This response earns two points.

2006 Mathematics Released Items

- 1 Roy drove 2,320 miles from Yakima, WA, to San Antonio, TX. It took him 40 hours to drive the total distance.

What was Roy's mean speed for the trip?

Show your work using words, numbers, and/or pictures.

What was Roy's mean speed for the trip? _____

2006 Mathematics Released Items

- 2 Ms. Espinosa's students are selling chocolates to raise money for a class trip. Their goal is to make \$100 in profit. Chocolates cost the school \$7 for 4 boxes. The students will sell each box for \$3.

How many boxes do the students need to sell to reach their goal?

Show your work using words, numbers, and/or pictures.

How many boxes do the students need to sell to reach their goal? _____

2007 Mathematics Released Items

1 Lynette needs to evaluate this expression:

$$[5 + 3(6 - 4) + 8] - 2$$

Which operation should be performed first?

- A. Add 5 and 3
- B. Add 4 and 8
- C. Subtract 2 from 8
- D. Subtract 4 from 6

Item Information

Score Points: 1

Tools: N

Strand and Target NS04 (Computation): Compute with rational numbers, using order of operations and addition, subtraction, multiplication, division, powers, and square roots (1.1.6)

Performance Data

(Use this space to fill in student performance information for your school and district.)

Percent Distribution			
School	District	State	Responses (* = correct response)
		15.1%	A
		2.3%	B
		2.8%	C
		79.3%	D*
		0.5%	NR

2007 Mathematics Released Items

- 3 Lorraine has a snow shoveling business. She charges \$15 to go to a home and \$2 for each hour that she shovels.

Let c = cost and h = number of hours.

Which equation would give the cost for a home that takes any number of hours to shovel?

- A. $c = 15 + 2h$
- B. $c = 15h + 2$
- C. $c = 2h$
- D. $c = h(15 + 2)$

Item Information

Score Points: 1

Tools: N

Strand and Target AS02 (Symbols and Notations): Express relationships between quantities using equality and inequality symbols; use variables to write expressions, linear equations, and inequalities that represent situations involving rational numbers (1.5.3, 1.5.4)

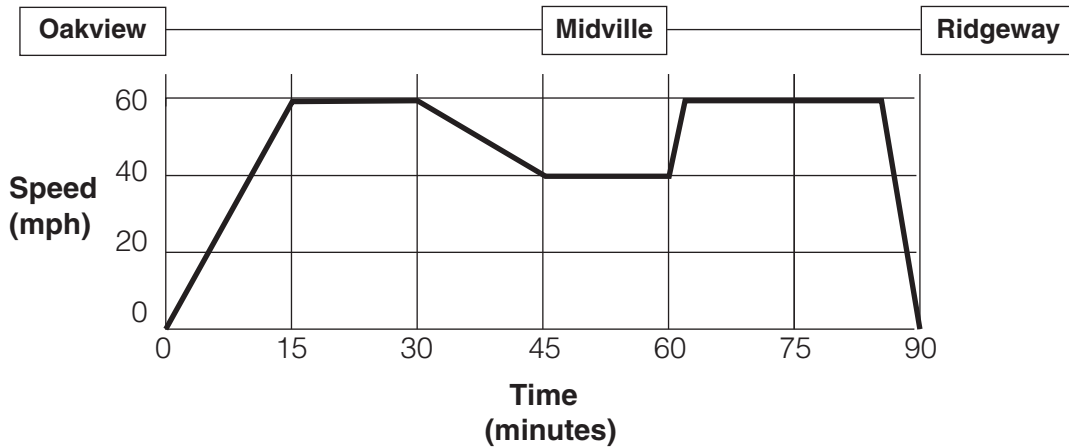
Performance Data

(Use this space to fill in student performance information for your school and district.)

Percent Distribution			
School	District	State	Responses (* = correct response)
		87.3%	A*
		4.1%	B
		2.3%	C
		6.1%	D
		0.1%	NR

2007 Mathematics Released Items

- 6 The Oakview soccer team traveled 75 miles from Oakview to Ridgeway. The graph shows the speed of the bus at different times during the trip.



Use the graph to describe the speed of the bus throughout the trip.

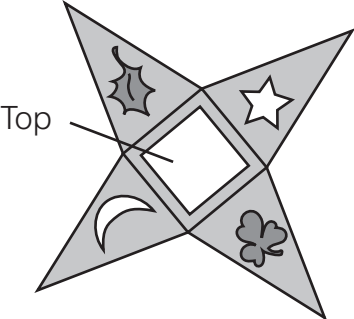
Be sure to include each of the following in your description:

- Give the length of time to reach Midville.
- Explain what occurs between 15 minutes and 30 minutes.
- Explain what occurs between 30 minutes and 45 minutes.
- Give the speed limit in Midville.
- Explain what happens between 60 and 85 minutes.
- Give the top speed.
- Give the overall average speed (mph).

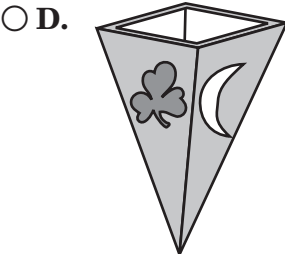
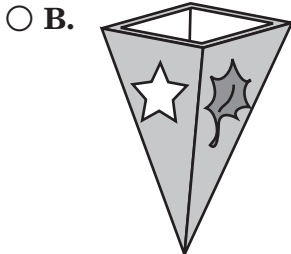
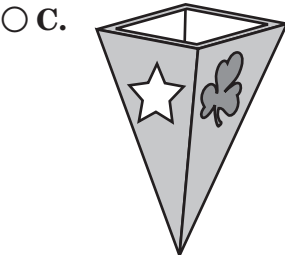
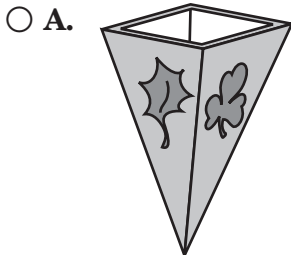
Show your work using words, numbers, and/or pictures.

2008 Mathematics Released Items

2 In a factory, a pyramid planter starts out as a flat pattern.



Which planter will result from the pattern shown?



2008 Mathematics Released Items

- 3 Helena is determining how much money she and her friends will need to go to the movies.

Each person going will buy a ticket, a bag of popcorn, and a drink. Helena writes a formula that will represent the situation.

$$m = q(t + p + d)$$

Which description represents the meaning of the variable q ?

- A. The price of a ticket
- B. The cost of concessions
- C. The number of people going
- D. The amount of money required

Item Information

Score Points: 1

Tools: X

Strand and Target AS02 (Symbols and Notations): Represent relationships between quantities using squares, cubes, and square roots; use variables to write expressions, linear equations, and inequalities that represent situations involving rational numbers (1.5.3, 1.5.4)

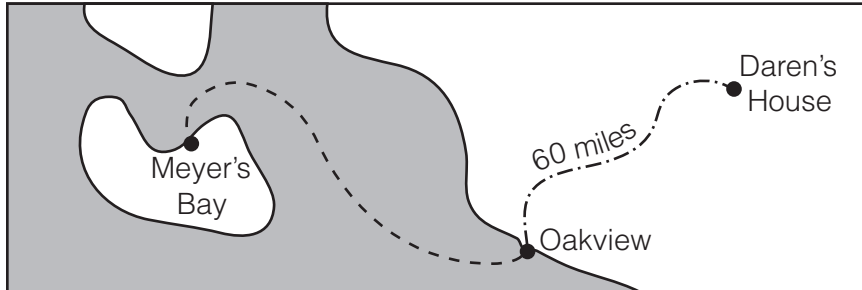
Performance Data

(Use this space to fill in student performance information for your school and district.)

Percent Distribution			
School	District	State	Responses (* = correct response)
		3.1%	A
		4.5%	B
		75.8%	C*
		16.4%	D
		0.3%	NR

2008 Mathematics Released Items

- 6** Daren lives 60 miles from the Oakview/Meyer's Bay Ferry. He is planning a trip to Meyer's Bay for a four-hour visit with a friend. He averages 30 miles per hour driving. The only way to get from Oakview to Meyer's Bay is to take a ferry, which takes one hour each way. Daren leaves his home at 8:00 A.M.



Oakview/Meyer's Bay Ferry Schedule	
Depart Oakview	Depart Meyer's Bay
5:15 A.M.	6:30 A.M.
7:45 A.M.	9:00 A.M.
10:20 A.M.	11:40 A.M.
1:00 P.M.	2:20 P.M.
3:40 P.M.	4:55 P.M.
6:10 P.M.	7:25 P.M.

Key
----- Ferry
-.-.-.- Road

At what time will Daren arrive at Meyer's Bay?

At what time will Daren get on a return ferry?

Be sure to include:

- Departure times of the ferries
- Driving time.

2008 Mathematics Released Items

Show your work using words, numbers, and/or pictures.

At what time will Daren arrive at Meyer’s Bay? _____

At what time will Daren get on a return ferry? _____

Mathematics

- 1** At Anthony Middle School there are 60 boys. The ratio of **boys to girls** is 4 to 3.

How many girls are at Anthony Middle School?

- A.** 30
- B.** 45
- C.** 75
- D.** 80

Key: B

- 2** Joyce wants to make money by mowing lawns this summer. She must pay her dad \$2 per hour to use his mower and she charges her customers \$6 per hour. She spends \$40 on advertising.

Let h = the number of hours she works.

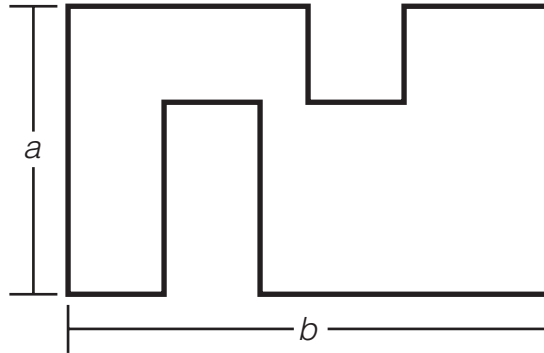
Which expression represents the amount of money she will earn?

- A.** $(6 + 2)h + 40$
- B.** $(6 + 2)h - 40$
- C.** $(6 - 2)h + 40$
- D.** $(6 - 2)h - 40$

Key: D

Mathematics

- 9 Omari is making a string design for art class. Look at the design.



Which expression can he use to figure how much string he needs to create the design?

- A. $a + b$
- B. $2a + 2b$
- C. $3a + 2b$
- D. $4a + 2b$

Key: D

Mathematics

- 11** Driving to a family reunion, the Schmitts traveled 810 miles in 15 hours. Returning home, they traveled at a mean speed of 6 miles per hour faster than the mean speed they had traveled to the reunion.

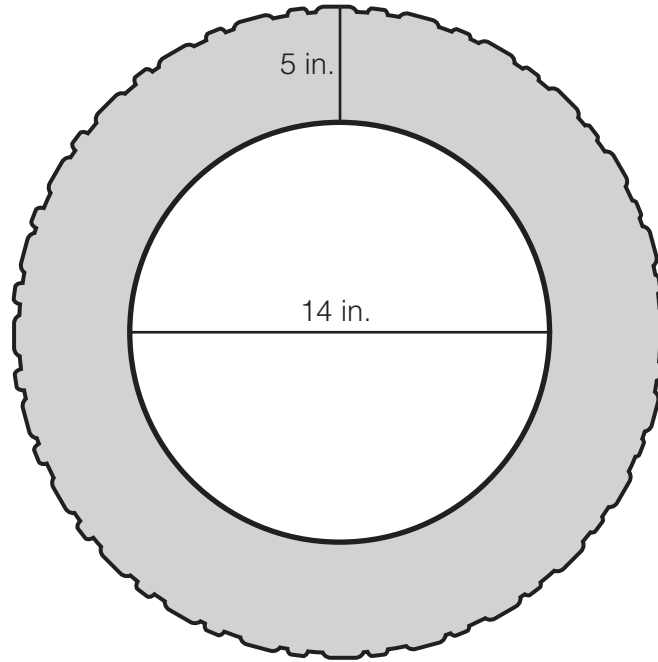
How long did it take the Schmitts to drive home?

- A.** 9.0 hours
- B.** 13.5 hours
- C.** 15.0 hours
- D.** 16.9 hours

Key: B

Mathematics

- 16** A 14-inch wheel rim has a diameter of 14 inches. When a tire is mounted and fully inflated, the wheel will expand another 5 inches from the rim.



$$\text{Circumference} = \pi d$$


Which choice **best** represents the circumference of the inflated tire?

- A. 30 inches
- B. 44 inches
- C. 60 inches
- D. 75 inches

Key: D

17 Mrs. Smiley wanted to have her carpets cleaned. She saw two advertisements:

 <p>Spotty Clean 3 Rooms for \$80.00 (up to 1000 sq ft) \$0.15 for each additional sq ft</p>

<p>We Love Dirt</p> <p>\$0.10 per sq ft No other charges</p> 
--

Friends tell her that both companies are very good.

- List two pieces of information Mrs. Smiley needs to have before she decides which is the least expensive choice for her.
- Explain why this information is important.

First piece of information she needs to have before she decides which is the least expensive choice? _____
Why is this information important? _____

Second piece of information she needs to have before she decides which is the least expensive choice? _____
Why is this information important? _____

Mathematics

- 18** Boris rode his bicycle for a local bike-a-thon. The bike-a-thon started at 9:00 A.M. and ended at 4:00 P.M. By 10:00 A.M., Boris had ridden 13 miles. Except for a one-hour lunch break, Boris rode at the same pace until 4:00 P.M.

How many miles did Boris ride in the bike-a-thon?

- A.** 52 miles
- B.** 65 miles
- C.** 78 miles
- D.** 91 miles

Key: C

- 19 Hakeem takes Nora to a restaurant for dinner. The bill is \$45, not including tip.

Sophie's Fine Dining	
Beverage	\$2.00
Beverage	2.00
Dinner	18.90
Dinner	18.50
Total	\$41.40
Tax	3.60
Final bill	\$45.00

Standard practice is to give the waiter a tip between 15% and 20% of the total bill. Hakeem doubles the tax to figure the tip.

- Determine the total amount of tip Hakeem left
- Explain why the method Hakeem used is a reasonable way to figure a tip between 15% and 20% of the total bill.

Show your work using words, numbers, and/or pictures.

What is the total amount of tip Hakeem left? _____

21 Araya made a circle in the snow. The circle had a radius of 5 meters.

What is the area of the circle she made in the snow?

$$\text{Area of circle} = \pi r^2$$

- A.** 15.7 m²
- B.** 25.0 m²
- C.** 75.0 m²
- D.** 78.5 m²

Key: D

Mathematics

- 22** Jorge has a window washing business. He charges \$10 to go to a home and \$3 for each window that he washes.

Let c = costs and n = number of windows.

Which equation would give the cost for a house with any number of windows?

- A.** $c = 10 + 3n$
- B.** $c = 10n + 3$
- C.** $c = 3n$
- D.** $c = n(10 + 3)$

Key: A

Mathematics

- 27** The perimeter of a rectangle is 200 feet. The short sides are each 25 feet long, but the lengths of the long sides are unknown.

Which equation represents this situation?

- A.** $2(25) + 2a = 200$
- B.** $25 + 2a = 200$
- C.** $2(25)a = 200$
- D.** $25a = 200$

Key: A

Mathematics

30 Britney correctly used the order of operations to solve a problem.

Problem

$$30 - 8 \div 2 \times 4 + 4$$

Which choice matches Britney's answer?

- A.** 18
- B.** 25
- C.** 33
- D.** 48

Key: A

- 33** Barb's class is conducting a walkathon. Her mother pledges \$15.00. Her father pledges \$3.50 per mile.

Barb says she can determine the amount of money she will earn using the equation $p = 3.5m + 15$.

- Explain the meaning of m in the equation.
- Explain the meaning of p in the equation.

Mathematics

- 37** Sarah’s tractor holds 8 gallons of gasoline when it is full. She wants to fill the tank with regular unleaded gasoline.

Gasoline Prices	
Regular unleaded	\$ 1.79/gallon
Unleaded plus	\$ 1.89/gallon
Supreme	\$ 1.99/gallon
Diesel fuel	\$ 1.85/gallon



Fuel Gauge on Sarah’s Tractor

Which pieces of information given can Sarah use to find the cost of filling her tank?

Explain how to use this information to find the total cost of the gasoline needed to fill the tank of Sarah’s tractor.

- 40** Casey's family plans to drive from Vancouver, WA, to Dallesport, WA, for a family reunion. They will make one 15-minute stop in Underwood and one 15-minute stop for gas in Bingen. They will travel at a constant rate of 60 miles per hour between stops. They will leave Vancouver at 2 P.M.

The chart shows the distances between each city.

Distance Between Cities

From	To	Distance
Vancouver, WA	Underwood, WA	70 miles
Underwood, WA	Bingen, WA	17 miles
Bingen, WA	Dallesport, WA	3 miles

Use the given information **to determine what time** Casey's family will arrive at the family reunion in Dallesport. Show all of the times and distances for the trip.

Show your work using words, numbers, and/or pictures.

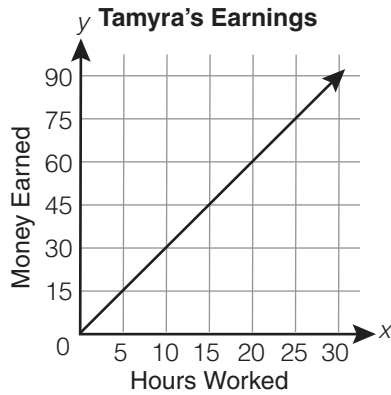
<p>What time will Casey's family arrive at the family reunion? _____</p>

Mathematics

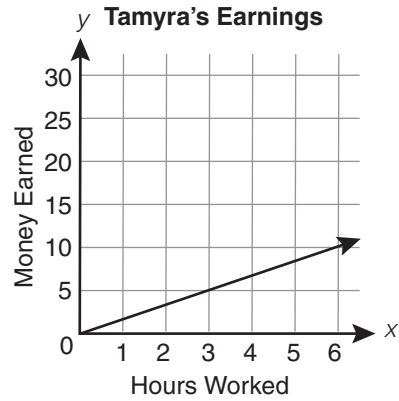
- 41 Tamyra is babysitting to earn money to visit her aunt. She earns \$3.00 for each hour of babysitting.

Which graph represents Tamyra's earnings from babysitting?

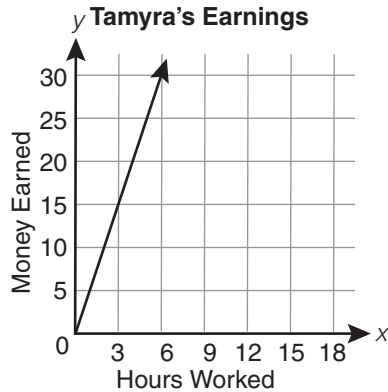
A.



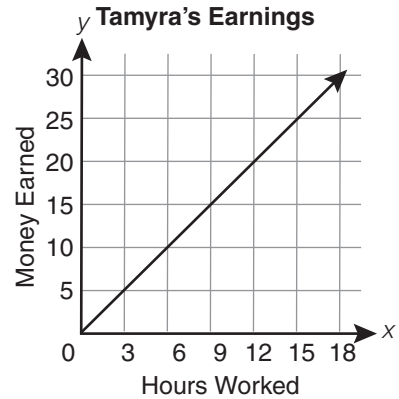
C.



B.



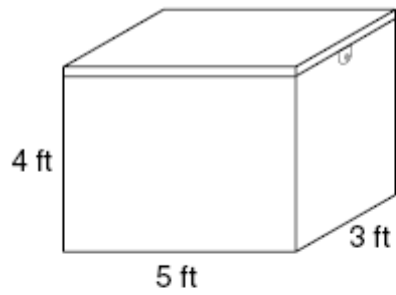
D.



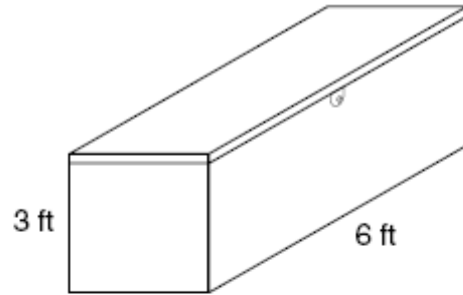
Key: A

Reminder: Use a No. 2 pencil only. Do not use a mechanical pencil or pen.

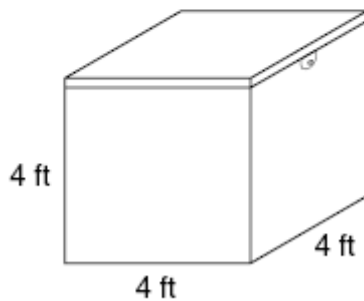
22 Terry is designing a flyer to advertise storage boxes that he sells.



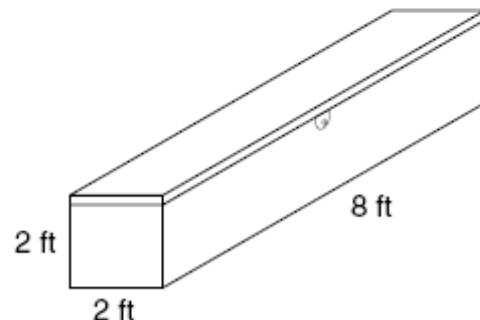
Box A



Box C



Box B



Box D

He wants to show the boxes **from least to greatest** volume. What is the correct order?

- A. B A C D
- B. A B C D
- C. D C B A
- D. D C A B

Key: D

2007 Mathematics Sample Items

- 11** A bicycle race across the United States starts in San Diego, California, and finishes in Atlantic City, New Jersey. There are more than 50 checkpoints along the route where riders find out how far they have traveled and their overall time.

What information is **unnecessary** for calculating the mean speed of an individual racer between two checkpoints?

- A. The distance between each checkpoint
- B. The exact number of checkpoints along the route
- C. The time an individual racer left each checkpoint
- D. The time an individual racer arrived at each checkpoint

Item Information

Score Points: 1

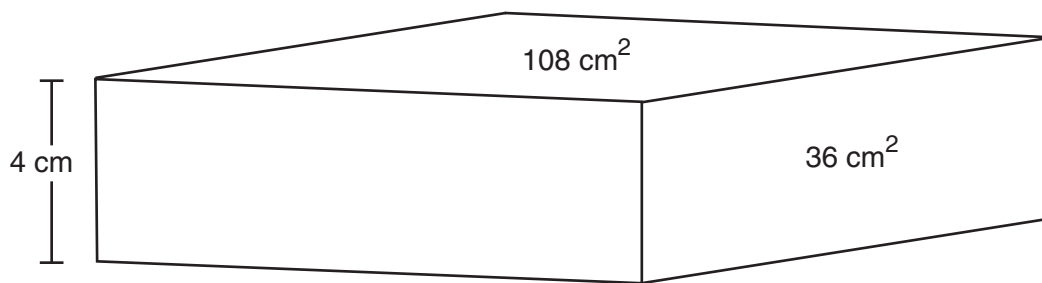
Key: B

Tools: X

Strand and Target SR01 (Define Problems): Identify questions to be answered in complex situations; recognize when information is missing or extraneous; identify what is known and unknown in complex situations (2.1.1, 2.1.2, 2.1.3)

2007 Mathematics Sample Items

15 Ms. Parker gave her students this picture of a rectangular prism:



What is the surface area of the rectangular prism?

Show your work using words, numbers, and/or diagrams.

What is the surface area of the rectangular prism? _____

Item Information

Score Points: 2

Tools: N

Strand and Target ME03 (Procedures): Use formulas, including the Pythagorean Theorem, to determine measurements of *triangles*, prisms, or cylinders (1.2.5)

2008 Mathematics Sample Items

- 2 Tina drove 100 miles in the first 2 hours and then drove 200 more miles in the next 5 hours.

What was her approximate average speed for the entire trip?

- A. 40 miles per hour
- B. 43 miles per hour
- C. 45 miles per hour
- D. 50 miles per hour

04074

Item Information

Score Points: 1

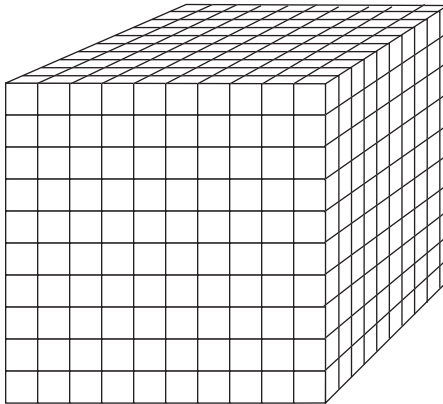
Key: B

Tools: N

Strand and Target ME02 (Units and Systems): Demonstrate understanding of rate and other derived units of measurement; demonstrate understanding of how to convert within the US or metric system to achieve an appropriate level of precision; explain why different situations require different levels of precision (1.2.2, 1.2.3)

2008 Mathematics Sample Items

- 3 A $10\text{ cm} \times 10\text{ cm} \times 10\text{ cm}$ wooden block is painted red on all of its faces. It is then cut into cubes, 1-cm on each edge.



How many cubic centimeter pieces have exactly 2 faces painted?

- A. 64
- B. 96
- C. 100
- D. 104

03176

Item Information

Score Points: 1

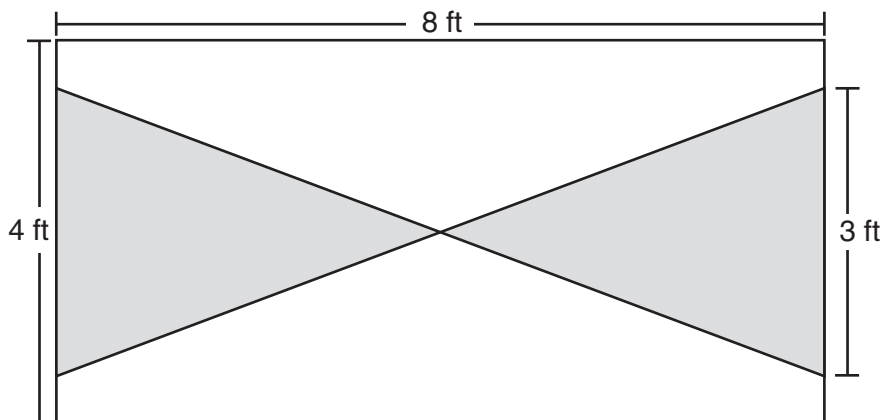
Key: B

Tools: X

Strand and Target GS01 (Properties and Relationships): Demonstrate understanding of the characteristics of cylinders, cones, and pyramids and the relationships among 1-dimensional, 2-dimensional, and 3-dimensional figures; draw, describe, and/or compare 1-dimensional, 2-dimensional, and 3-dimensional shapes and figures, including prisms, cylinders, cones, and pyramids; use the Pythagorean Theorem to determine if a triangle is a right triangle (1.3.1, 1.3.2)

2008 Mathematics Sample Items

- 7 Donna created two congruent pentagons from a rectangular piece of plywood by removing the two shaded triangles.



Which percent represents the amount of the rectangular piece of plywood used for the pentagons?

- A. 25.00%
- B. 37.50%
- C. 50.00%
- D. 62.50%

27741

Item Information

Score Points: 1

Key: D

Tools: Y

Strand and Target MC01 (Connections within Mathematics): Use concepts and procedures from multiple mathematics content strands in a given problem or situation; relate and use different mathematical models and representations of the same situation (5.1.1, 5.1.2)