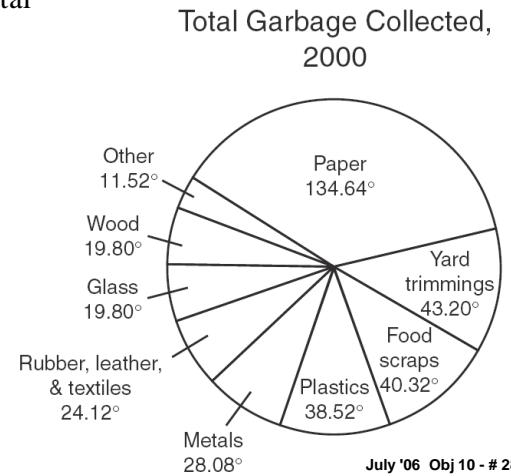


George saves 15% of his total gross weekly earnings from his 2 part-time jobs. He earns \$6.15 per hour from one part-time job and \$7.25 per hour from the other part-time job. George works a total of 40 hours between the two jobs each week. What additional information is needed to determine the amount of his earnings he saves each week?

- A The number of days he works at each job
- B The number of hours he works at each job
- C The number of hours he works each day
- D The number of hours he works each month

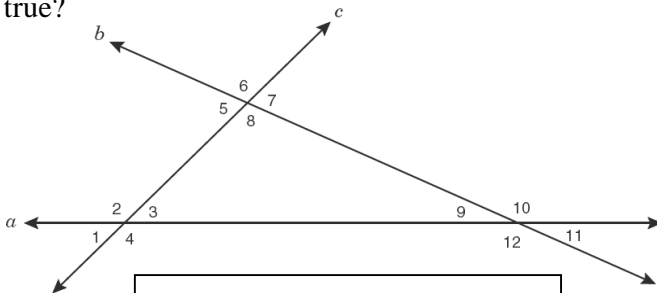
July '06 Obj 10 - # 3

The circle graph below shows the different kinds of garbage collected in the year 2000 according to the Environmental Protection Agency.



July '06 Obj 10 - # 28

Line a intersects line b and line c , as shown below. Which of the following angle relationships must be true?



- A $m\angle 2 + m\angle 6 + m\angle 10 = 180^\circ$
- B $m\angle 3 + m\angle 6 + m\angle 12 = 180^\circ$
- C $m\angle 1 + m\angle 6 + m\angle 11 = 180^\circ$
- D $m\angle 4 + m\angle 6 + m\angle 9 = 180^\circ$

July '06 Obj 10 - # 13

According to this information, which of the following combinations of items is closest to $\frac{2}{3}$ of the garbage collected in the year 2000?

- F Paper, food scraps, plastics, and other
- G Paper, yard trimmings, food scraps, and metals
- H Paper, yard trimmings, plastics, and glass
- J Paper, food scraps, plastics, and wood

July '06 Obj 10 - # 28 (cont)

Which of the following is a sufficient condition to show that a certain equation does not represent a linear function?

- F The graph of the equation has a slope of zero.
- G The graph of the equation has the set of all real numbers as its domain.
- H The graph of the equation has an undefined slope.
- J The graph of the equation has exactly one y -intercept.

July '06 Obj 10 - # 22

Karen, Simone, and Cameron contributed \$64 altogether to pay their phone bill. Karen's contribution was four dollars more than twice as much as Cameron's. Karen's contribution was three times as much as Simone's. What was the amount of Cameron's contribution?

- F \$36
- G \$16
- H \$12
- J Not here

July '06 Obj 10 - # 34

Taylor drove down the street to the recreation center. He passed a library, then a playground, and finally a hospital before arriving at the recreation center. The library is 1.7 kilometers from the hospital. The playground is 1.5 kilometers from the recreation center and 0.6 kilometer from the hospital. Which of the following best represents the distance from the library to the recreation center?

- F** 3.8 km
- G** 2.0 km
- H** 3.2 km
- J** 2.6 km

July '06 Obj 10 - # 38

F $\angle JKM \sim \angle NLM$, because corresponding angles of similar triangles are congruent.

G $\frac{MK}{MN} = \frac{KJ}{NL}$, because the ratios of the lengths of corresponding sides of similar triangles are equal.

H $\frac{KJ}{LN} = \frac{ML}{MK}$, because the ratios of the lengths of corresponding sides of similar triangles are equal.

J $\angle KJM \sim \angle MNL$, because corresponding angles of similar triangles are congruent.

July '06 Obj 10 - # 50 (cont)

Thalia played a word game in which she had a minute to create 5- and 6-letter words from a given word. The given word was *wonderful*. Thalia scored 7 points for each 5-letter word she created and 15 points for each 6-letter word she created. Which of the following is not a possible value for the total points Thalia scored?

- F** 37
- G** 46
- H** 58
- J** 59

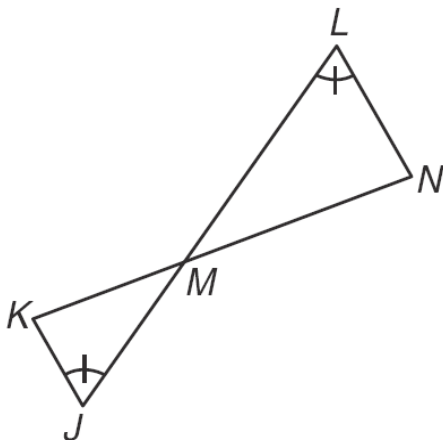
July '06 Obj 10 - # 48

On a certain math problem, Cynthia mistakenly divided a number by 4 and then subtracted 24 and got 12 for her answer. After reading the problem again, she realized that she should have subtracted 24 before dividing by 4. What was the correct answer?

- A** -48
- B** -28
- C** 30
- D** 144

July '06 Obj 10 - # 55

Look at the figure shown below. If $\triangle MKJ \sim \triangle MNL$, which of the following must be true?



July '06 Obj 10 - # 50

A biologist noticed that the population of ladybugs in a sample doubled every 3 days. If the initial population sample was 30 ladybugs, what was the population of ladybugs at the end of 9 days?

- A** 90
- B** 270
- C** 120
- D** 240

Apr '06 Obj 10 - # 17

If $r + s = t$ and $x = y$, which of the following must be true?

- | | |
|---|---------------------|
| F | $r + s - x = y - t$ |
| G | $r + s - t = x + y$ |
| H | $r + s + t = x - y$ |
| J | $r + s + x = t + y$ |

Apr '06 Obj 10 - # 24

Patti works as a waitress. She earns \$4.50 per hour plus tips and serves an average of 6 customers per hour. If Patti earned \$108 during an 8-hour shift, which amount best represents the average tip per customer?

- | | |
|---|---------|
| A | \$4.00 |
| B | \$1.50 |
| C | \$3.00 |
| D | \$13.50 |

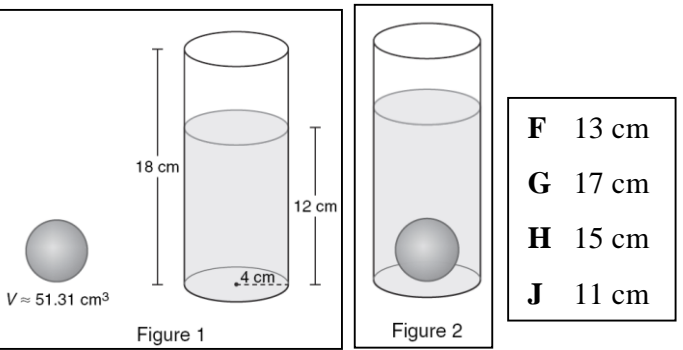
Apr '06 Obj 10 - # 41

For each grading period Mr. Brown gives his students one project and two tests. The project counts as 20% of the students' final grade, and the mean of the 2 test scores counts as the rest of their grade. In Mr. Brown's class Anthony earned a grade of 87 on his first test and a grade of 96 on his second test. Which of the following is a reasonable minimum grade Anthony must score on his project in order to have a final grade of at least 90?

- | | | | |
|---|----|---|----|
| A | 66 | B | 84 |
| C | 87 | D | 92 |

Apr '06 Obj 10 - # 29

Look at the solid sphere and the cylinder containing water shown in Figure 1. Figure 2 shows the sphere submerged in the water inside the cylinder. Which is closest to the height of the water level in Figure 2?



Apr '06 Obj 10 - # 44

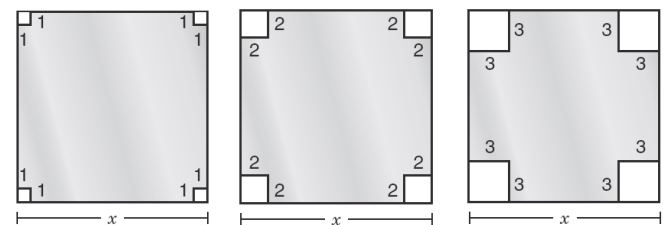
The spreadsheet below contains 20 cells. A cell in a spreadsheet can be identified first by the column letter and then by the row number. For example, the number 10 is found in Cell C4. If the number in Cell A3 = B4 - 3(E2 + D4), which of the following must be the number in Cell E2?

	A	B	C	D	E
1	6	-3	7	1	5
2	12	-4	8	2	
3	18	-5	9	3	-35
4	24	-6	10	4	

F	-21
G	-15
H	-4
J	-12

Apr '06 Obj 10 - # 30

Four square pieces are cut from the corners of a square sheet of metal. As the size of the small squares increases, the remaining area decreases, as shown below.



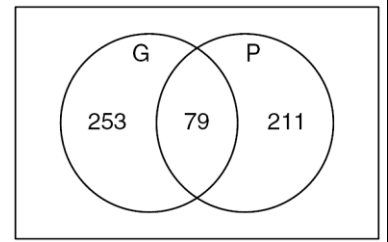
Apr '06 Obj 10 - # 47

If this pattern continues, what will be the difference between the first square's shaded area and the fifth square's shaded area?

- A 4 square units
- B 24 square units
- C 49 square units
- D 96 square units

Apr '06 Obj 10 - # 47 (cont)

A sports-drink company surveyed 600 athletes to find out if they liked Sports Drink G or Sports Drink P. The diagram shows the results of the survey.



Which expression can be used to determine the number of athletes surveyed who did not like either Sports Drink G or Sports Drink P?

- A $(253 + 211)$
- B $(253 + 79 + 211)$
- C $600 - (253 + 211)$
- D $600 - (253 + 79 + 211)$

Feb '06 Obj 10 - # 11

Four friends took turns using the stationary bike at a health club. Huan used it three times as long as Melanie. Susie used it half as long as David, and David used it 15 minutes longer than Huan. The four friends used the stationary bike for a total of 2.5 hours. How long did Susie use the stationary bike?

- F 60 min
- G 45 min
- H 30 min
- J 15 min

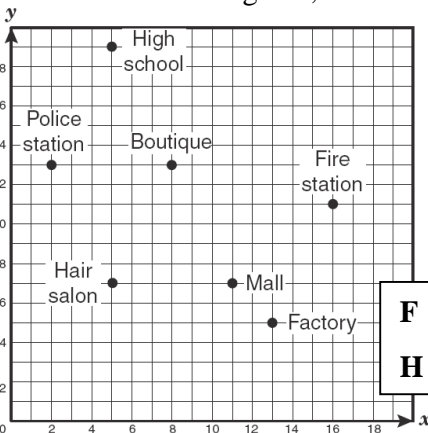
Apr '06 Obj 10 - # 50

The Pruitts own a natural-foods store and purchase sacks containing 5 kilograms of flax seed for \$30 each. The Pruitts then package the seed into 50-gram bags. The bags cost \$0.06 each. If these bags of 50 grams of seed sell for \$0.98 per bag, what is the profit on a 5-kilogram sack of flax seed?

- A \$65
- B \$62
- C \$33
- D \$98

Feb '06 Obj 10 - # 15

The owners of Crispy Sweet Doughnut Shop want to open a shop centrally located to the police station, the high school, the fire station, and the factory. Based on the information given, which of the following

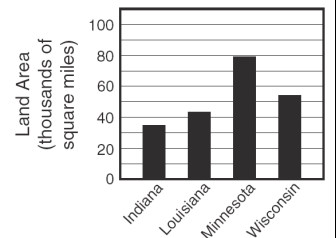
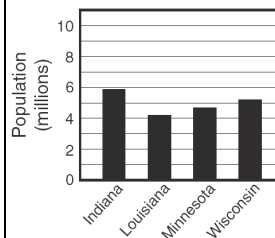


points best represents the location where the new Crispy Sweet Doughnut Shop should open?

- F (9, 12) G (5, 13)
- H (6, 10) J (8, 13)

Apr '06 Obj 10 - # 58

The two bar graphs shown below represent the populations and land areas of four states. Based on the information given in the bar graphs, which of these four states is the least densely populated?



- A Indiana B Louisiana
- C Minnesota D Wisconsin

Feb '06 Obj 10 - # 27

A ship on the ocean left a dock, traveled 6 miles due north, and then traveled 4 miles due east. Which of the following describes the method for finding the straight-line distance from the ship to the dock?

- A Use $c = 6$ and $a = 4$ in the equation $c^2 = a^2 + b^2$ and then solve for b
- B Use $a = 6$ and $b = 4$ in the equation $c^2 = a^2 + b^2$ and then solve for c
- C Use $a = 6$ and $b = 4$ in the equation $c^2 = a^2 + b^2$, solve for c , and then find $a + b + c$
- D Use $c = 6$ and $a = 4$ in the equation $c^2 = a^2 + b^2$, solve for b , and then find $a + b + c$

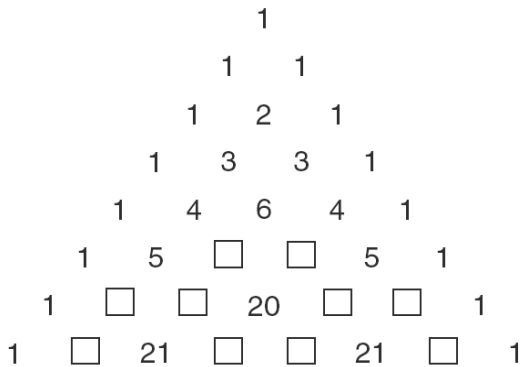
Feb '06 Obj 10 - # 29

If \overline{JM} is a base and \overline{LM} is a side of isosceles trapezoid $JKLM$, then which statement must be true?

- A \overline{JM} and \overline{KL} are parallel.
- B \overline{LM} and \overline{JK} are parallel.
- C \overline{JM} and \overline{KL} are perpendicular.
- D \overline{LM} and \overline{JM} are perpendicular.

Feb '06 Obj 10 - # 37

The figure below shows a partial view of Pascal's triangle. If each square represents a missing number in Pascal's triangle, which of the following could not be a missing number used to complete the partial view of Pascal's triangle shown above?



- A 24
- B 15
- C 35
- D 10

Feb '06 Obj 10 - # 31

Kimberly and Pam ran a 1-mile race. If k represents the number of seconds Kimberly took to finish the race and p represents the number of seconds Pam took to finish the race, which of the following describes a situation in which Kimberly finished the race before Pam?

- A $k \geq p$
- B $k \leq p$
- C $k > p$
- D $k < p$

Feb '06 Obj 10 - # 41

Points M and N lie on circle P . If circle P has a radius r , which of the following statements cannot be true?

- A $MN > r$
- B $MN > 2r$
- C $MN = r$
- D $MN = 2r$

Feb '06 Obj 10 - # 33

Jesse had a collection of baseball cards. He gave 10 cards to his little brother and equally divided the remaining cards among himself and 3 of his friends. He then had 15 cards. How many baseball cards did Jesse originally have in his collection?

- F 20
- G 50
- H 70
- J 100

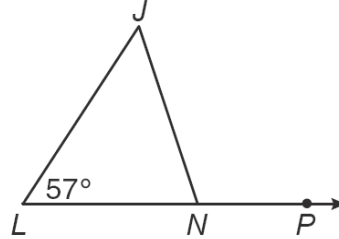
Feb '06 Obj 10 - # 58

Mr. Ortega photographed the students in the math club. He arranged the students into 4 parallel rows. Each row had 3 more people than the previous row. If the first 2 rows had a total of 9 people, how many people total were in the group?

- F** 30
- G** 27
- H** 24
- J** 21

Dec '06 Obj 10 - # 8

Look at the diagram below. Which of the following relationships must be true?



- F** $m\angle JNP + m\angle JNL + 57^\circ = 180^\circ$
- G** $m\angle NJL + 57^\circ = m\angle JNP$
- H** $m\angle JNP = 57^\circ$
- J** $m\angle JNL + 57^\circ = m\angle JNP$

Dec '06 Obj 10 - # 28

The years 707, 1001, and 2332 are examples of palindrome numbers. The year 2002 also represents a palindrome number. What is the nearest year before 2002 that also represents a palindrome number?

Record your answer and fill in the bubbles on your answer document.
Be sure to use the correct place value.

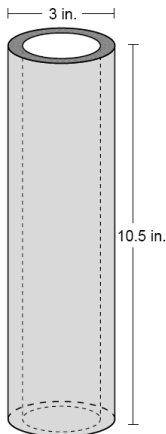
Dec '06 Obj 10 - # 21

Only 4 members of the student council attended a meeting, and they greeted one another with handshakes. Each member shook the hand of each of the other members only once, for a total of 6 handshakes. If all 8 student council members had been present and each member had shaken the hand of each of the other members only once, what would have been the total number of handshakes?

- F** 10
- G** 21
- H** 12
- J** 28

Dec '06 Obj 10 - # 34

A cylindrical piece of pipe insulation is shown below. If the insulation is 0.5 inch thick, what is the approximate volume of insulation used?



- F** 231 in.³
- G** 74 in.³
- H** 41 in.³
- J** 33 in.³

Dec '06 Obj 10 - # 26

On a certain math problem, Cynthia mistakenly divided a number by 4 and then subtracted 24 and got 12 for her answer. After reading the problem again, she realized that she should have subtracted 24 before dividing by 4. What was the correct answer?

- A** -48
- B** -28
- C** 30
- D** 144

Dec '06 Obj 10 - # 51

Mrs. Jones has a piece of carpet that is 12 feet long and 2 feet wide. She wants to cut off a section that is 3 feet long and 1 foot wide. She wants to cut up the remaining piece of carpet into 22 pieces that are 1 foot square. Why is this scenario impossible?

- F** A piece 3 feet long by 1 foot wide cannot be cut from the carpet.
- G** Some pieces of carpet would be left over.
- H** There is not enough carpet to cut all the pieces.
- J** The carpet cannot be cut into 1-squarefoot pieces.

Dec '06 Obj 10 - # 54

- F** Picking any figure from 2 through 4 and rotating it 90° clockwise will result in the adjacent figure to its right.
- G** Picking any figure from 2 through 5 and reflecting it across its vertical axis of symmetry will result in the adjacent figure to its left.
- H** Picking any figure from 2 through 4 and rotating it 90° counterclockwise will result in the adjacent figure to its right.
- J** Picking any figure from 2 through 5 and reflecting it across its horizontal axis of symmetry will result in the adjacent figure to its left.

Oct '06 Obj 10 - # 14 (cont)

Mr. Ortega photographed the students in the math club. He arranged the students into 4 parallel rows. Each row had 3 more people than the previous row. If the first 2 rows had a total of 9 people, how many people total were in the group?

- A** 30
- B** 27
- C** 24
- D** 21

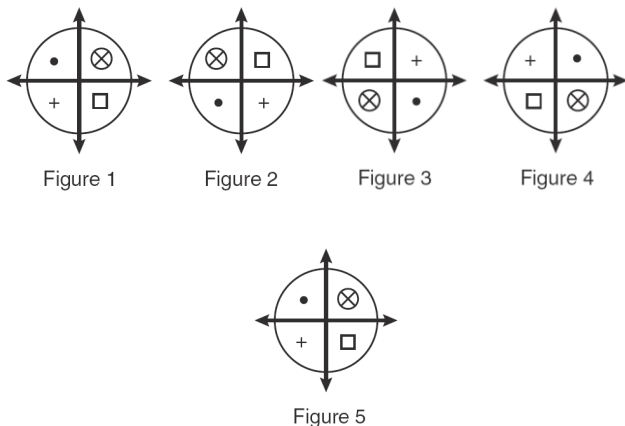
Oct '06 Obj 10 - # 7

Alfred has some nickels, dimes, and pennies in his pocket that add up to less than a dollar. Alfred has twice as many nickels as dimes and twice as many pennies as nickels. According to this information, what is the greatest possible total value of the coins that Alfred has in his pocket?

- A** \$0.99
- B** \$0.96
- C** \$0.88
- D** \$0.72

Oct '06 Obj 10 - # 15

Which generalization best describes the pattern shown in the figures below?



Oct '06 Obj 10 - # 14

Neal has \$5 to spend on lunch during a field trip. The restaurant where Neal will have lunch has many items for 99¢ plus tax. If he buys a soft drink for \$0.89 plus tax, what is the maximum number of 99¢ items he can still purchase if the tax rate is 7.75%?

Record your answer and fill in the bubbles on your answer document.
Be sure to use the correct place value.

Oct '06 Obj 10 - # 21

In $\triangle XYZ$, $XY < YZ$, and $XZ < XY$. Which statement must be true?

- A $m\angle X < m\angle Y < m\angle Z$
- B $m\angle Y < m\angle Z < m\angle X$
- C $m\angle Z < m\angle X < m\angle Y$
- D $m\angle X < m\angle Z < m\angle Y$

Oct '06 Obj 10 - # 23

The nets of four rectangular prisms are shown below. None of these prisms have tops. Which of the following statements is true?

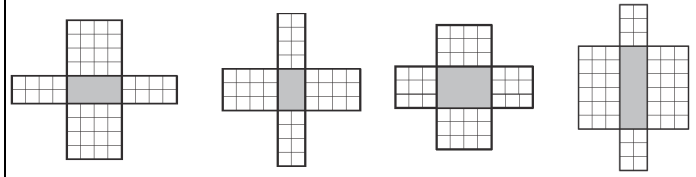


Figure 1

Figure 2

Figure 3

Figure 4

- F Figures 1 and 4 have equal volumes.
- G Figures 2 and 3 have equal lateral surface areas.
- H Figures 1 and 2 have equal lateral surface areas.
- J Figures 3 and 4 have equal volumes.

Oct '06 Obj 10 - # 54

If $x \diamond y = 2y - x + xy$, what is the value of $7 \diamond 4$?

- F 38
- G 28
- H 29
- J 43

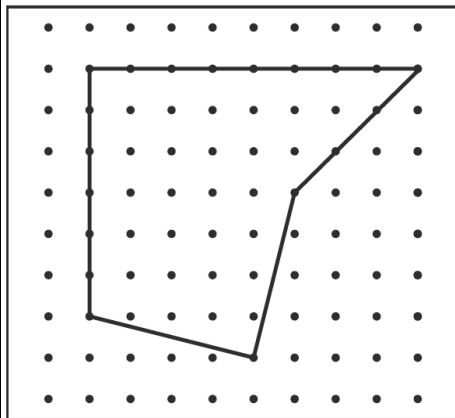
Oct '06 Obj 10 - # 38

The radioactive isotope carbon-11 is used in medicine for brain-scan procedures. It decays, losing half its mass every 20 minutes. If a doctor checks on a patient two hours after the isotope has been administered and 0.10 microgram of it still remains, which is closest to the amount of isotope carbon-11 administered to the patient?

- F 6 micrograms
- G 3 micrograms
- H 2 micrograms
- J 1 microgram

Oct '06 Obj 10 - # 56

The horizontal and vertical distances between each of the pegs on the geoboard shown below represent 1 unit. Which is closest to the area of the polygon modeled on the geoboard?



- F 36 units²
- G 29 units²
- H 46 units²
- J 24 units²

Oct '06 Obj 10 - # 50