

High School Math

SAMPLE A – 2004 TAKS Released Test	
Student Expectation: N / A	
Find the slope of the line $2y = 8x - 3$.	
A $-\frac{3}{2}$	Confused y-intercept with slope.
B 4 *	Correct: Divided both sides of the equation by 2 and identified the slope.
C 8	Did not “solve for y” which required dividing both sides of the equation by 2.
D <i>Not here</i>	Various reasons.

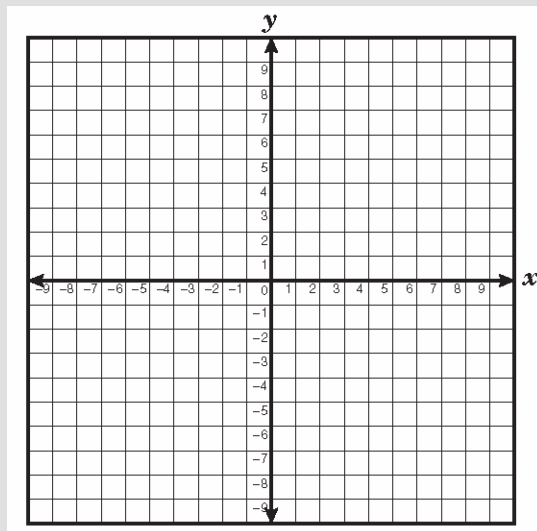
Question 11 – 2004 TAKS Released Test	
Student Expectation: 09 – 8.3(B) Estimate and find solutions to application problems involving percents and proportional relationships such as similarity and rates.	
Antonio works 40 hours per week at Electronics Warehouse. He earns \$6.50 per hour plus a 3% commission on the total dollar value of the service contracts he sells. If Antonio’s hourly rate were increased by \$0.15 and his commission were raised to 5%, how much would he earn if he sold \$4000 worth of service contracts for the week?	
A \$126.50	Calculated the commission $0.03 \cdot 4000$ and added the hourly wage \$6.50.
B \$206.65	Subtracted the percentages to get 2 and multiplied by 40 hours. Added the result to an hourly wage of \$6.65 and a commission of $0.03 \cdot 4000$.
C \$466.00 *	Correct: Hourly wage is $\$6.65 \cdot 40$ hours plus $0.05 \cdot \$4000$ in commission.
D \$580.00	Added the 3% commission to hourly wage of \$6.50 to get \$9.50 per hour for 40 hours then added commission $0.05 \cdot 4000$.

High School Math

Question 18 – 2004 TAKS Released Test

Student Expectation: 09 – 8.6(A) Generate similar shapes using dilations including enlargements and reductions.

$\triangle DFG$ has vertices $D(2, 4)$, $F(4, 8)$, and $G(6, 4)$.



$\triangle DFG$ is dilated by a scale factor of $\frac{1}{4}$ and has the origin as the center of dilation. What are the coordinates of F' ?

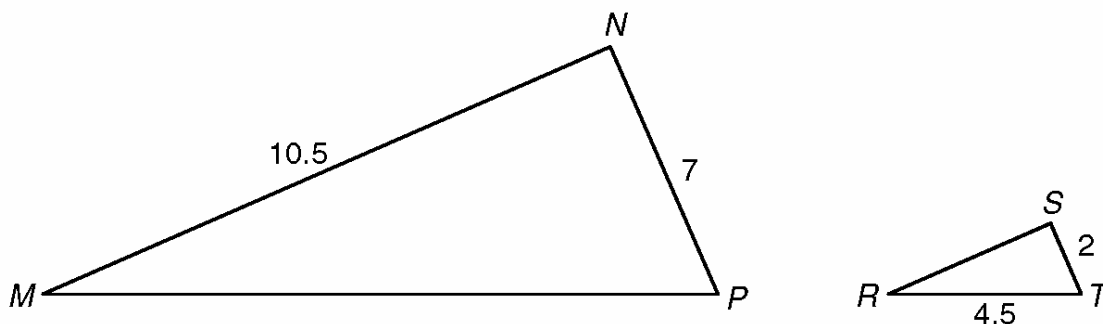
A $(1, 2)$ *	Correct: $F(4, 8)$ is multiplied by $\frac{1}{4}$ to get $(1, 2)$.
B $(\frac{1}{2}, 1)$	Coordinate D multiplied by $\frac{1}{4}$.
C $(16, 32)$	Coordinate F multiplied by 4 instead of $\frac{1}{4}$.
D $(\frac{3}{2}, 1)$	Coordinate G multiplied by $\frac{1}{4}$.

High School Math

Question 31 – 2004 TAKS Released Test

Student Expectation: 09 – 8.6(A) Generate similar shapes using dilations including enlargements and reductions.

$\triangle MNP \sim \triangle RST$ is shown below.



Which scale factor was used to transform $\triangle MNP$ to $\triangle RST$?

A $\frac{1}{3}$	If the student uses the ruler on the formula chart to measure the lengths of segments MP and RT, the actual measurement of segment MP is close to three times that of segment RT.
B $\frac{1}{2}$	Using the ruler on the formula chart to measure missing lengths in the diagram is a mistake, but segment MP measures close to 9 cm. Students measuring segment MP and comparing the measurement to 4.5, as labeled for RT, will get a scale factor of one-half.
C $\frac{2}{7}$ *	Correct: The scale factor of the similar triangles can be calculated using segments NP and ST. The lengths are labeled 7 units and 2 units respectively. To reduce the size of triangle MNP to triangle RST, one would need to multiply by a number less than one.
D 5	Student may have incorrectly chose the 2 in triangle RST and the 10.5 in triangle MNP then decided on the scale factor of 5 ($2 \cdot 5 = 10$). Another possible explanation is a students could have estimated triangle MNP to be about 5 times bigger than triangle RST.

Question 6 – 2004 TAKS Released Test

Student Expectation: 09 – 8.6(B) Graph dilations, reflections, and translations on a coordinate plane.

Triangle XYZ is translated so that X is mapped to X'.

??

Which coordinate pair best represents YY'?

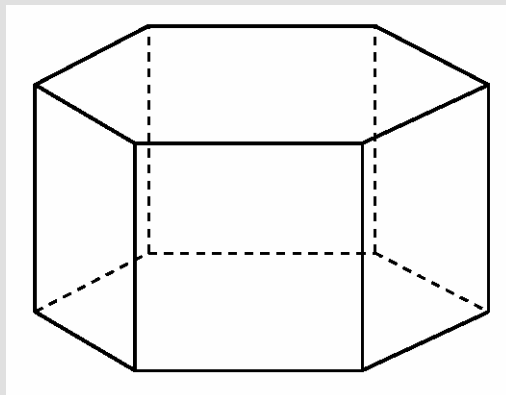
A $(-3, -8)$	Found Z' after correctly completing the translation.
B $(2, -7)$	Miscalculated the number translated on the y-axis.
C $(2, -6)$ *	Correct: The figure is translated 8 units down and 4 units left so y' is $(2, -6)$.
D $(2, -2)$	Mapped Z to X' and miscalculated by 1 unit.

High School Math

Question 4 – 2004 TAKS Released Test

Student Expectation: 09 – 8.7(A) Draw solids from different perspectives.

The drawing shows a 3-dimensional solid.



Which best represents the shape of the solid when viewed from the top?

A Pentagon	Incorrectly counted the number of sides or does not know the vocabulary.
B Hexagon *	Correct: Counted six sides and has knowledge of the vocabulary.
C Heptagon	Incorrectly counted the number of sides or does not know the vocabulary.
D Octagon	Incorrectly counted the number of sides or does not know the vocabulary.

Question 30 – 2004 TAKS Released Test

Student Expectation: 09 – 8.7(B) Use geometric concepts and properties to solve problems in fields such as art and architecture.

An artist made a drawing of a house with a tree next to it. The drawing is $\frac{1}{18}$ the size of the actual house and tree. The tallest point of the house is 12 feet 8 inches, and the tree is 27 feet tall. How many inches tall is the tree in the drawing?

A 8.4 in.	Height of the house in the drawing.
B 18 in. *	Correct: Covert 27 feet to inches ($27*12=324$) and divide by 18 ($324/18=18$).
C 23.4 in.	Random answer choice in numerical order with the other answer choices.
D 486 in.	The student multiplied 27 by 18.

Question 49 – 2004 TAKS Released Test

Student Expectation: 09 – 8.7(B) Use geometric concepts and properties to solve problems in fields such as art and architecture.

Ms. Hill wants to carpet her rectangular living room, which measures 14 feet by 11 feet. If the carpet she wants to purchase costs \$1.50 per square foot, including tax, how much will it cost to carpet her living room?

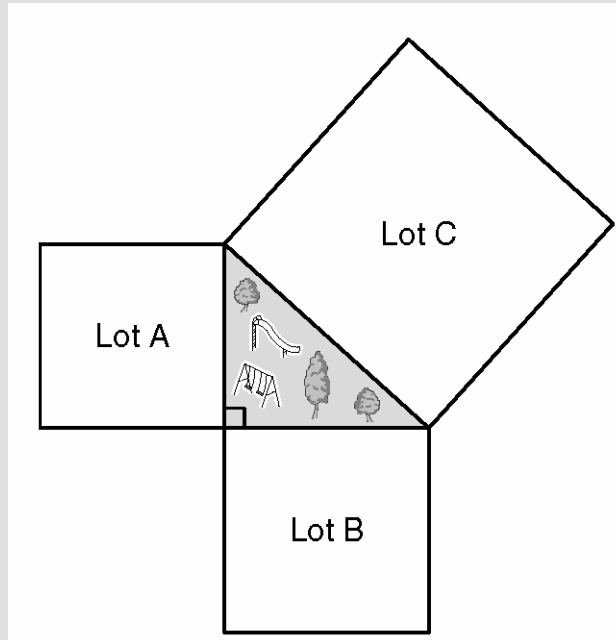
A \$50	Student calculated the perimeter.
B \$75	Student calculated the perimeter and multiplied it by the cost per square foot.
C \$154	Found the area of the carpet but did not find the price.
D \$231 *	Correct: The student found the area of the carpet ($14*11=154$) and multiplied the result by the price of the carpet $154*1.5 = 231$.

High School Math

Question 33 – 2004 TAKS Released Test

Student Expectation: 09 – 8.7(C) Use pictures or models to demonstrate the Pythagorean Theorem.

The drawing below shows 3 square parking lots that enclose a grassy area shaped like a right triangle.



If Lot A's perimeter is 300 yards and Lot B's perimeter is 400 yards, what is the perimeter of Lot C?

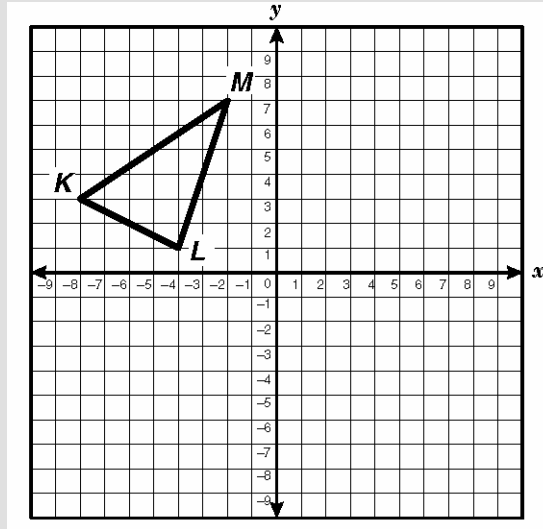
<p>A 500 yd *</p>	<p>Correct: The park is a right triangle so the Pythagorean Theorem is used to solve the problem. Lot A has perimeter of 300 yards so each side is 75 yards. The perimeter for lot B is 400, so each side is 100 yards. $75^2 + 100^2 = c^2$ or $c = 125$. The perimeter of c is $125(4) = 500$ yards. An alternative method is to know that the diagram fits the pattern of a 3-4-5 right triangle.</p>
<p>B 700 yd</p>	<p>Misunderstood the problem and assumed the perimeters listed in the description were areas. By the Pythagorean Theorem, the areas of lot A + lot B = lot C. The student added lot A and lot B to get 700, but the problem states perimeters and not areas.</p>
<p>C 1400 yd</p>	<p>Incorrectly calculated the Pythagorean Theorem as $300 \cdot 2 + 400 \cdot 2 = 1400$.</p>
<p>D 2000 yd</p>	<p>Calculated the hypotenuse of the park to be 500 yards and multiplied by 4 to get a perimeter of 2000 yards.</p>

High School Math

Question 52 – 2004 TAKS Released Test

Student Expectation: 09 – 8.7(D) Locate and name points on a coordinate plane using ordered pairs of rational numbers.

$\triangle KLM$ has coordinates $K(-8, 3)$, $L(-4, 1)$, and $M(-2, 7)$. What will be the new coordinates of point M if the triangle is translated 4 units to the right and 3 units down?



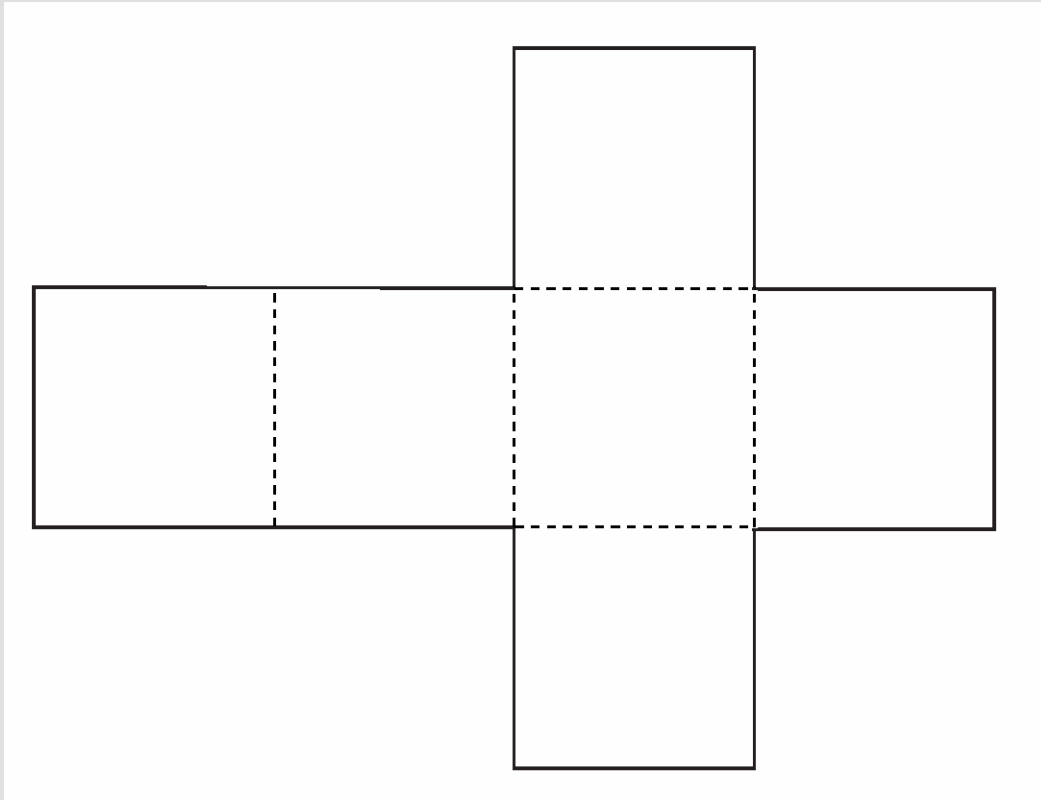
A $(0, -2)$	Translated point L
B $(2, 4)$ *	Correct: The student successfully covered point M the required number of units.
C $(-4, 0)$	Translated point K
D $(-6, 4)$	Translated point M 4 units to the left and 3 units down.

High School Math

Question 35

Student Expectation: 09 – 8.8(A) Find surface area of prisms and cylinders using concrete models and nets (two-dimensional models).

The net of a cube is shown below.



Use the ruler on the Mathematics Chart to measure the dimensions of the cube to the nearest inch. Find the surface area of the cube to the nearest square inch.

A 2 in.^2	The area of one square rounded to the nearest whole number.
B 9 in.^2 *	Correct: Each square is approximately 1.25 in. by 1.25 in. for an area of 1.56. There are six squares $1.56 \times 6 = 9.36$
C 14 in.^2	The area if each square is measured to be 1.5 in. by 1.5 in.
D 18 in.^2	The area if each square is measured to be 1.75 in. by 1.75 in.

High School Math

Question 22 – 2004 TAKS Released Test

Student Expectation: 09 – 8.8(C) Estimate answers and use formulas to solve application problems involving surface area and volume.

A cylindrical water tank has a radius of 2.8 feet and a height of 5.6 feet. The water tank is filled to the top. If water can be pumped out at a rate of 36 cubic feet per minute, about how long will it take to empty the water tank?

A 3 h	Found the volume of the tank to be 137 then added the 36 cubic feet per minute to get 173 and divided by 60 minutes for an answer of 2.88.
B 2 h	Found the volume of the tank to be 137 but did not divide by the rate of 36 cubic feet per minute. Divided 137 by 60 for 2.28 hours.
C 4 min *	Correct: Find the volume of the tank by squaring the radius 2.8 and multiply by pi and the height of 5.6 feet. The volume is 137.85 cubic feet. Divide the volume by the rate of 36 cubic feet per minute for an answer of 3.83 minutes.
D 1 min	Did not square the radius. $2.8 \times 3.14 \times 5.6 / 36 = 1.3$

Question 26 – 2004 TAKS Released Test

Student Expectation: 09 – 8.9(A) Use the Pythagorean Theorem to solve real-life problems.

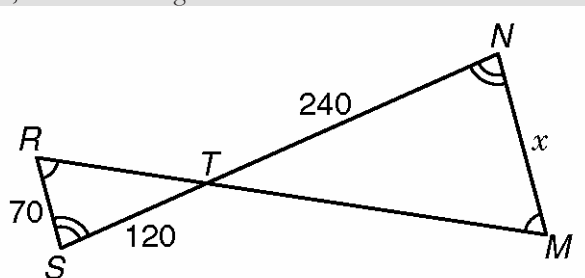
A square park has a diagonal walkway from 1 corner to another. If the walkway is about 38 yards long, what is the approximate length of each side of the park?

A 6 yd	Took the square root of 38 without using the Pythagorean Theorem.
B 19 yd	Divided the hypotenuse of 38 by 2 instead of squaring it and using the Pythagorean Theorem.
C 27 yd *	Using the Pythagorean Theorem, the student realizes that sides a and b are equal and side c is 38 yards. The equation $a^2 + a^2 = 38^2$ or $2a^2 = 1444$ results in $a = 26.87$ yards.
D 54 yd	Set up the problem correctly using the Pythagorean Theorem, but solved for a incorrectly. Multiplied 1444 by 2 in the equation $2a^2 = 1444$ instead of dividing by 2.

Question 1 – 2004 TAKS Released Test

Student Expectation: 09 – 8.9(B) Use proportional relationships in similar shapes to find missing measurements.

If $\triangle TSR$ is similar to $\triangle TNM$, what is the length of x ?



A 240 units	Used the length of segment TN or realized the sides in triangle TNM are double the lengths of triangle TSR and incorrectly determined that segments ST and MN are similar.
B 140 units *	Correct: Calculated that the sides in triangle TNM are double the lengths of triangle TSR and determined that segments RS and MN are similar.
C 120 units	Used the ruler on the formula chart and found length of segment MN is about the same as segment ST .
D 70 units	Confused the concept of similarity with congruence.

High School Math

Question 29 – 2004 TAKS Released Test	
Student Expectation: 09 – 8.10(A) Describe the resulting effects on perimeter and area when dimensions of a shape are changed proportionally.	
Tony and Edwin each built a rectangular garden. Tony’s garden is twice as long and twice as wide as Edwin’s garden. If the area of Edwin’s garden is 600 square feet, what is the area of Tony’s garden?	
A 1200 ft ²	Student does not understand the relationship between linear measurement and area. Twice as long and twice as wide does not double the area.
B 2400 ft ² *	Correct: The student realized that doubling the length and width of a rectangle quadruples the area.
C 3600 ft ²	If the student drew a diagram and incorrectly labeled the sides 30 by 30 to represent Edwin’s garden, then doubling the sides will produce a rectangle that is 3600 square feet.
D 4800 ft ²	Student is confused with area and volume. If the problem were written such that a given volume were 600 cubic feet, then doubling the lengths of the edges would create a volume of 4800 cubic feet.

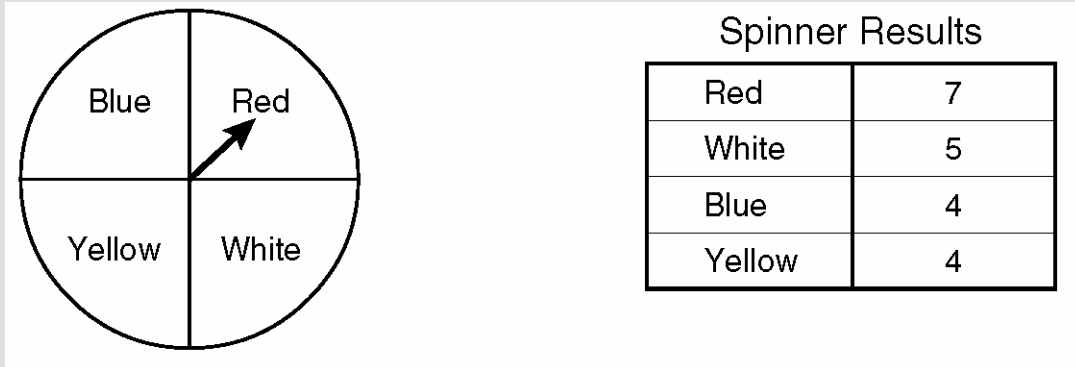
Question 37 – 2004 TAKS Released Test	
Student Expectation: 09 – 8.10(A) Describe the resulting effects on perimeter and area when dimensions of a shape are changed proportionally.	
The scale factor of two similar polygons is 2:3. The perimeter of the larger polygon is 150 centimeters. What is the perimeter of the smaller polygon?	
A 100 cm *	Correct: Scale factor can determined by multiplying the ratio and the polygon. Since the perimeter of the larger polygon is given, it needs to be reduced to find the perimeter of the smaller polygon. In the ratio 2:3, the only number to reduce is 2/3. The solution is $150 \times \frac{2}{3} = 100$ cm.
B 75 cm	Did not use the scale factor 2:3. Most likely chose “2” from the scale factor and divided the perimeter of the larger polygon $150/2=75$.
C 50 cm	Did not use the scale factor 2:3. Most likely chose “3” from the scale factor and divided the perimeter of the larger polygon $150/3=50$.
D 150 cm	Did not use the scale factor. In fact, anyone choosing this answer probably guessed without reading the question.

High School Math

Question 32 – 2004 TAKS Released Test

Student Expectation: 09 – 8.11(B) Use theoretical probabilities and experimental results to make predictions and decisions.

A spinner was spun 20 times. The results are shown in the table below.



Which color on the spinner has the same experimental probability as theoretical probability?

A Red	Students may have chosen this answer because it has the highest number of spins, or the diagram shows the spinner (arrow) in the red area.
B White *	Correct: The diagram is composed of four equal areas so the theoretical probability of the spinner landing in any one area is $\frac{1}{4}$ or 25%. The number of spins stopping in the white area is 5 out of 20 or $\frac{1}{4}$.
C Blue	Blue is one-fourth the area in the diagram and the spinner results equals 4. The student chose this answer based on the diagram.
D Yellow	Yellow is one-fourth the area in the diagram and the spinner results equals 4. The student chose this answer based on the diagram.

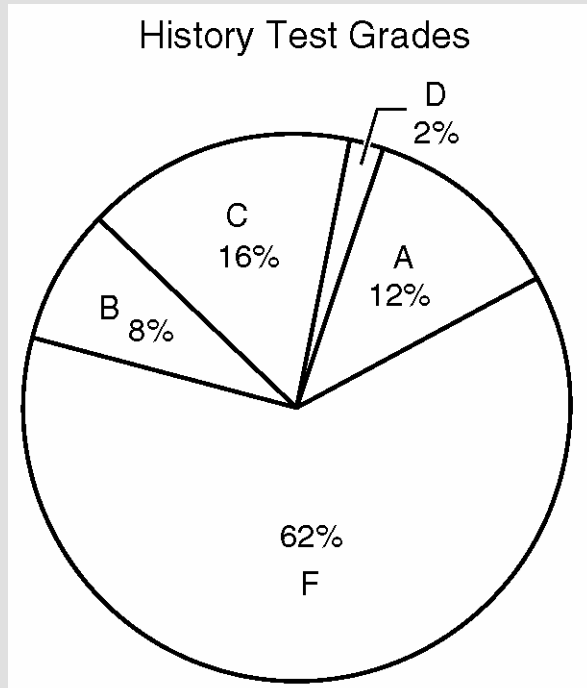
High School Math

Question 40 – 2004 TAKS Released Test

Student Expectation: 09 – 8.12(C) Construct circle graphs, bar graphs, and histograms, with and without technology.

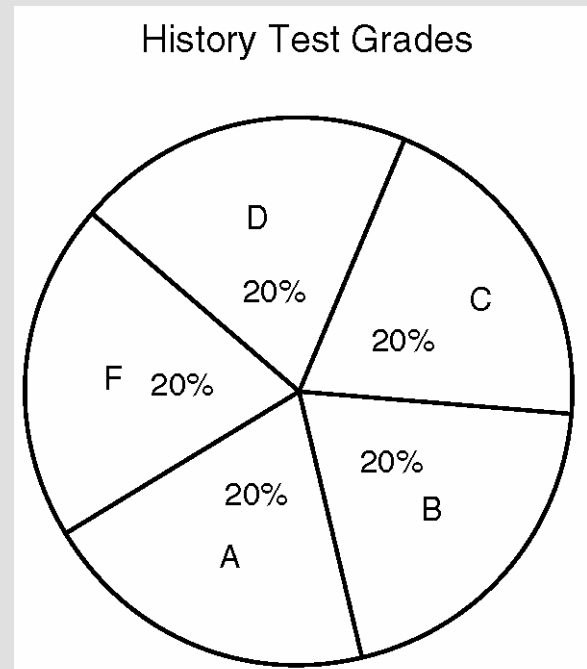
Students in two honors history classes took their first test. Of 40 students taking the test, 12 received an A, 16 received a B, 8 received a C, 2 received a D, and the remaining received an F. Which circle graph best represents these data?

A



Did not convert the frequency of grades to percentages.

B

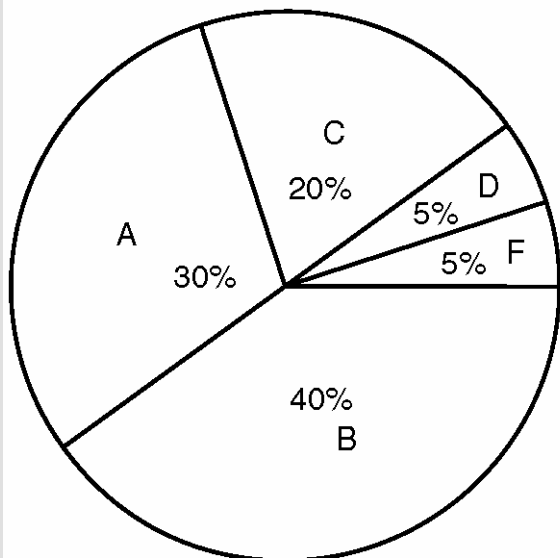


Students choosing this answer probably did not read the problem and guessed.

High School Math

C *

History Test Grades



Correct: The percentages are represented accurately in the graph.

$$A = \frac{12}{40} \text{ or } 30\%$$

$$B = \frac{16}{40} \text{ or } 40\%$$

$$C = \frac{8}{40} \text{ or } 20\%$$

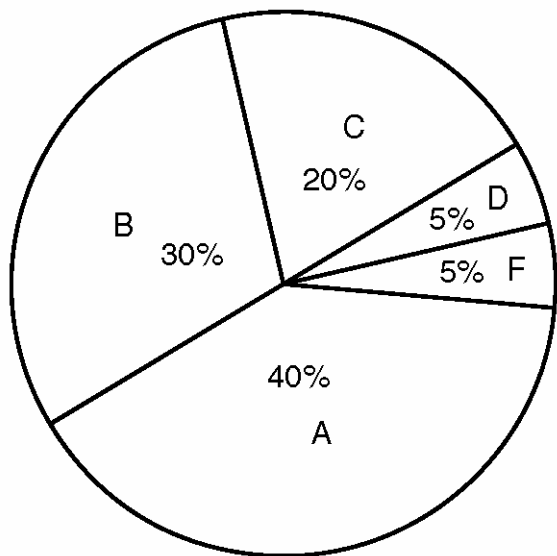
$$D = \frac{2}{40} \text{ or } 5\%$$

40 students $- 12 - 16 - 8 - 2 = 2$ students got an F on the test.

$$F = \frac{2}{40} \text{ or } 5\%$$

D

History Test Grades



The percentages for A and B were reversed.

High School Math

Question 3 – 2004 TAKS Released Test

Student Expectation: 09 – 8.13(B) Recognize misuses of graphical or numerical information and evaluate predictions and conclusions based on data analysis.

The table shows the results of a survey given to 450 graduating seniors about their educational plans after high school.

Institution	Percent
University	44
Community college	26
Technical school	15
Undecided	15

Based on these data, which of the following statements is true?

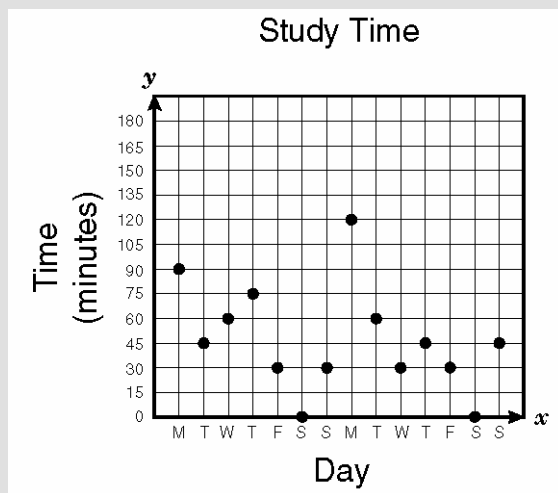
A Only 15 students have no future educational plans.	Overlooked the label of the second column and incorrectly assumed it is the number of students rather than percent of students.
B More students plan to attend a community college or technical school than plan to attend a university.	Incorrectly combined the percentages for community college and technical school.
C Fewer than half of the students plan to attend a university. *	Correct: Read 44% from the table and knows this is less than half of the students.
D Fewer than one-fourth of the students plan to attend a community college.	Incorrectly translated one-fourth as 25%, which is not fewer than 26% as listed in the table, or the student calculated that 26 out of 450 (5.7%) graduating seniors will attend community college.

High School Math

Question 14 – 2004 TAKS Released Test

Student Expectation: 09 – 8.13(B) Recognize misuses of graphical or numerical information and evaluate predictions and conclusions based on data analysis.

The graph below shows the amount of time Dennis spent studying over a 2-week period in October.



Which of the following statements would be an invalid conclusion for these data?

A Dennis spent a total of 660 minutes studying.	A valid conclusion when all values are summed. Students who chose this answer added incorrectly.
B Dennis studied for an average of about 47 minutes per day.	A valid conclusion when 660 minutes is divided by 14 days. Students who chose this answer may not have included the two values of 0 in which case the average would have been incorrectly calculated as $660/12 = 55$.
C Dennis studied for an average of 330 minutes per week.	A valid conclusion when 660 minutes is divided by 2 weeks.
D Dennis earned good grades during this 2-week period. *	Correct: There is no evidence to support the statement about Dennis' grades.

Question 38 – 2004 TAKS Released Test

Student Expectation: 09 – 8.14(A) Identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics.

Adam's age is 4 years less than twice Blanca's age. If Adam is 16 years old, which equation can be used to determine Blanca's age?

A $2(x - 4) = 16$	The student correctly decided on an equation that subtracts 4 years from Blanca's age but incorrectly decided to double the difference instead of doubling Blanca's age.
B $2x - 4 = 16$ *	Correct: Blanca's age is not known so call it x . Four years less than twice Blanca's age is $2x - 4$. Adam is 16 so the complete equation is $2x - 4 = 16$.
C $4 - 2x = 16$	Student chose the answer choice that is in the same order as the numbers in the problem.
D $2(4 - x) = 16$	The student incorrectly chose the answer choice with 4 and x in the order as stated in the problem and also decided to double the difference which is also incorrect.

High School Math

Question 48 – 2004 TAKS Released Test	
Student Expectation: 09 – 8.14(C) Select or develop an appropriate problem-solving strategy from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem.	
Jake’s square backyard covers an area of 104 square meters. How can Jake best determine the length of each side of his backyard?	
A Divide the area by the number of sides	Confused area with perimeter.
B Square the area	The student understands there is a relationship between squaring and area but did not read the problem correctly, or misread the answer choice as “square root of the area.”
C Find the square root of the area *	Correct: If squaring the side of a square is equal to the area, then the opposite is also true. Taking the square root of the area of a square is equal to the length of a side.
D Divide the area in half	Students choosing this answer have the misconception that x^2 and $\frac{x}{2}$ are inverse operations.

Question 23 – 2004 TAKS Released Test	
Student Expectation: 09 – 8.15(A) Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.	
The amount of material needed to make a basketball best represents the ball’s _____.	
A volume	Does not understand the relationship between the material needed to make a ball that inflates, or does not know that a basketball is inflated with air and is not solid.
B surface area *	Correct: Understands that the material of the object represents the surface area.
C circumference	Generalized the shape of the ball to the circumference of a circle.
D perimeter	Lacks appropriate vocabulary

Question 51 – 2004 TAKS Released Test	
Student Expectation: 09 – 8.15(A) Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.	
A middle school band must be at the contest site by 8:00 A.M. to participate in a competition. It takes 45 minutes to load the bus with the band’s equipment, and it takes 1 hour 45 minutes to travel to the contest site. What should be the first step in determining the band’s departure time?	
A Add the time it takes to travel to the contest site to 8:00 A.M.	Omitting the time required to load band equipment.
B Add the time it takes to load the bus to 8:00 A.M.	Omitting the time required to travel to the contest.
C Add the travel time and loading time together *	Correct: Both tasks must be accomplished in order to calculate departure time.
D Subtract the loading time from the travel time	Students choosing this answer were probably thinking to subtract some time in order to leave earlier. This is the only answer choice that suggests a subtraction.

High School Math

Question 12 – 2004 TAKS Released Test

Student Expectation: 09 – 8.16(A) Make conjectures from patterns or sets of examples and nonexamples.

The figure below shows a partial view of Pascal's triangle.

Pascal's Triangle					
Row 1:			1		
Row 2:		1		1	
Row 3:		1	2	1	
Row 4:	1	3	3	1	
Row 5:	1	4	6	4	1

Which row of numbers best represents the seventh row in Pascal's triangle?

A 1 5 10 10 5 1	Found row 6 of Pascal's triangle.
B 1 6 15 20 15 6 1 *	Correct: Recognized that row six was missing from the diagram and correctly identified this answer choice as row 7.
C 1 7 21 35 35 21 7 1	Incorrectly assumed that the second and seventh numbers in the row name the row number.
D 1 8 28 56 70 56 28 9 1	Miscounted the number of rows or recognized that the middle number are multiples of 7.

Question 15 – 2004 TAKS Released Test

Student Expectation: 09 – 8.16(A) Make conjectures from patterns or sets of examples and nonexamples.

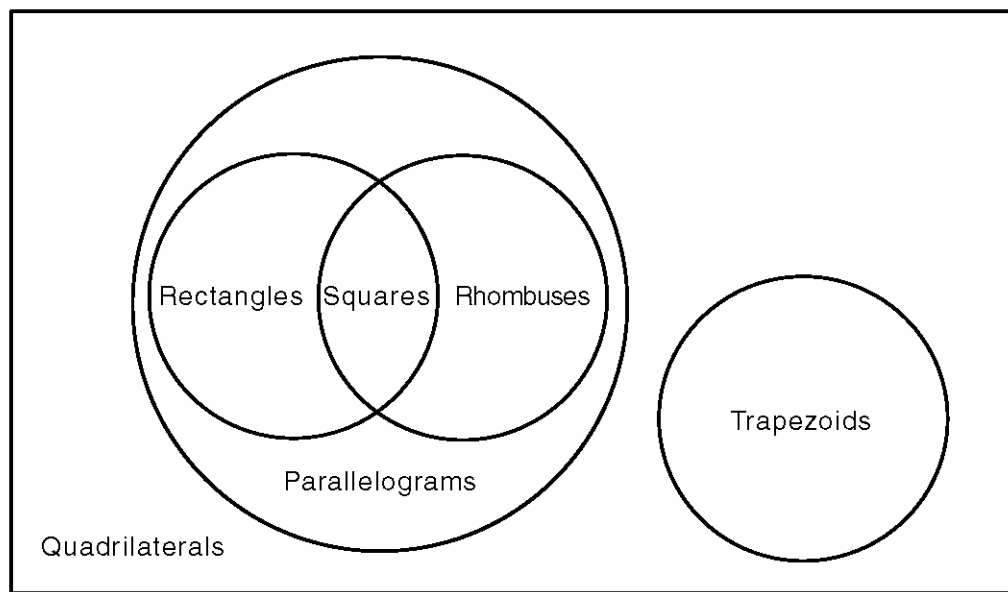
Mr. Collins invested some money that will double in value every 12 years. If he invested \$5,000 on the day of his daughter's birth, how much will the investment be worth on his daughter's 60th birthday?

A \$300,000	This answer choice is equal to \$5,000 per year for 60 years. $5000 * 60 = 300000$.
B \$160,000 *	Correct: Doubling every 12 years to age 60 is starting with the original amount of \$5,000 summing 5 times. $[5,000+5,000=10,000 +10,000=20,000 +20,000=40,000+40,000=80,000+80,000=160,000]$
C \$80,000	Counted the original \$5,000 as the first sum or counted the number of sums required to 60 years incorrectly.
D \$320,000	Miscounted the number of sums required to 60 years. The student added an extra 12-year doubling.

High School Math

Question 25 – 2004 TAKS Released Test

Student Expectation: 09 – 8.16(A) Make conjectures from patterns or sets of examples and nonexamples.



Which of the following is a valid conclusion based on the diagram shown above?

A All rhombuses are squares.	This answer was most likely chosen because the two terms are in the same circle.
B All rhombuses are rectangles.	This answer was most likely chosen because both terms are in the same larger circle.
C All quadrilaterals are parallelograms.	This answer was most likely chosen because the circle labeled parallelograms is inside the rectangle labeled quadrilateral.
D All rectangles are parallelograms. *	Correct: The student understands that the circle labeled rectangle is completely inside the circle labeled parallelograms and all rectangles, then, are included.

Question 28 – 2004 TAKS Released Test

Student Expectation: 09 – 8.16(B) Validate his/her conclusions using mathematical properties and relationships.

Sean is an Algebra I student who believes that $xy^2 = (xy)^2$. Rudy informs Sean that this theory is not always true. Which pair of values for x and y could Rudy use to disprove Sean's theory?

A $x = 0$ and $y = 2$	Student may added x and y on the left side of the equation and multiplied x and y on the right hand side because they are inside the parentheses.
B $x = 1$ and $y = 2$	Student may have added x and y on both sides while following the correct order of operations. $1 + 4$ on the left hand side and 9 on the right hand side.
C $x = 2$ and $y = 0$	Student may added x and y on the left side of the equation and multiplied x and y on the right hand side because they are inside the parentheses.
D $x = 2$ and $y = 1$ *	Correct: The student squared y on the left hand side before multiplying by 2 and multiplied x and y on the right hand side before squaring to show that $2 = 4$ disproves Sean's theory.

High School Math

Question 41 – 2004 TAKS Released Test

Student Expectation: 09 – A.B1(B) The student gathers and records data, or uses data sets, to determine functional (systematic) relationships between quantities.

Which equation could be used to generate this table of values?

x	y
-1	2
0	1
1	2
2	5

A $y = -2x$

Students favoring this answer choice stopped calculating after the first point. The final three points do not fit the equation listed.

B $y = 2x + 1$

This equation works for points (0,1) and (2,5). It may be that a student selecting this answer randomly chose the two points that worked in the equation and didn't bother to try the remaining two points.

C $y = x + 1$

This equation works for points (0,1) and (1,2). It may be that a student selecting this answer randomly chose the two points that worked in the equation and didn't bother to try the remaining two points.

D $y = x^2 + 1$ *

Correct:
 $2 = (-1)^2 + 1$
 $1 = 0^2 + 1$
 $2 = 1^2 + 1$
 $5 = 2^2 + 1$

High School Math

Question 50 – 2004 TAKS Released Test

Student Expectation: 09 – A.B1(B) The student gathers and records data, or uses data sets, to determine functional (systematic) relationships between quantities.

Which equation best describes the relationship between the corresponding values of x and y shown in the table?

x	y
-2	-12
0	-6
1	-3
4	6

A $y = x - 10$	This equation works for the first pair of numbers but not the other three pair. Student worked the first calculation and decided this is the correct answer.
B $y = 2x - 8$	This equation works for the first pair of numbers but not the other three pair. Student worked the first calculation and decided this is the correct answer.
C $y = 3x - 6$ *	Correct: $-12 = 3(-2) - 6$ $-6 = 3(0) - 6$ $-3 = 3(1) - 6$ $6 = 3(4) - 6$
D $y = x^2 - 8$	Does not work for any pair of numbers in the table. Students who chose this answer probably decided to pick the most complicated answer and not do any calculations.

Question 27 – 2004 TAKS Released Test

Student Expectation: 09 – A.B1(C) The student describes functional relationships for given problem situations and writes equations or inequalities to answer questions arising from the situations.

The temperature in degrees Celsius, C , is $\frac{5}{9}$ of the difference between the temperature in degrees Fahrenheit, F , and the constant 32. Which equation best represents this relationship?

A $C = \frac{5}{9} - (F + 32)$	The student chose the answer choice in which the variables and numbers are in the same order as stated in the problem, and is familiar enough with the formula to know that it contains parentheses,
B $C = \frac{5}{9}(F + 32)$	Student is familiar with the formula but translated <i>and</i> in the phrase “ <u>in degrees Fahrenheit, F, and the constant 32</u> ” as addition.
C $C = \frac{5}{9}(F - 32)$ *	Correct: Identified the <i>difference</i> as a subtraction between F and 32 and $5/9$ of that difference requires multiplication.
D $C = \frac{5}{9} - F + 32$	Answer choice D is a literal translation where <i>difference</i> is subtraction; <i>and</i> is addition.

High School Math

Question 24 – 2004 TAKS Released Test

Student Expectation: 09 – A.B1(D) The student represents relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities.

Jerome received a gift card for \$20 worth of video rentals from a video store. If the cost of renting a video is \$2.50, which table best describes b , the balance remaining on the gift card after he rents n videos?

A

n	b
0	\$20.00
1	\$17.50
2	\$15.00
4	\$10.00
6	\$5.00

Correct: The table shows a reduction of \$2.50 for every video rented.

B

n	b
0	\$20.00
2	\$17.50
4	\$15.00
6	\$12.50
8	\$10.00

Student ignored the values for n . The table shows a reduction of \$2.50 for every **two** videos rented.

C

n	b
1	\$17.50
2	\$15.00
3	\$13.50
4	\$11.00
5	\$8.50

Student failed to examine all rows carefully. Row three shows a reduction of \$1.50 for a video rental

D

n	b
0	\$20.00
1	\$15.00
4	\$10.00
6	\$2.50
8	\$0.00

Student examined the bottom three rows and found them to be correct but failed to see that row is a video rental for \$5.00.

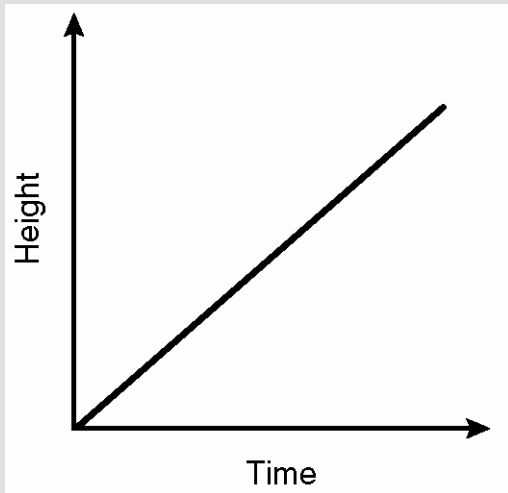
High School Math

Question 46 – 2004 TAKS Released Test

Student Expectation: 09 – A.B1(E) The student interprets and makes inferences from functional relationships.

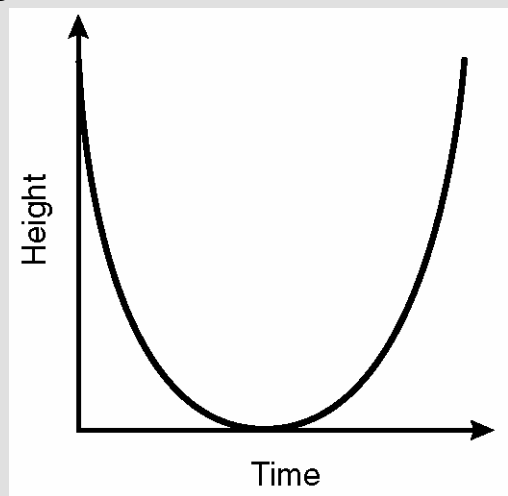
Which graph best represents the relationship between the height of a burning candle and the amount of time that passes as the candle burns?

A



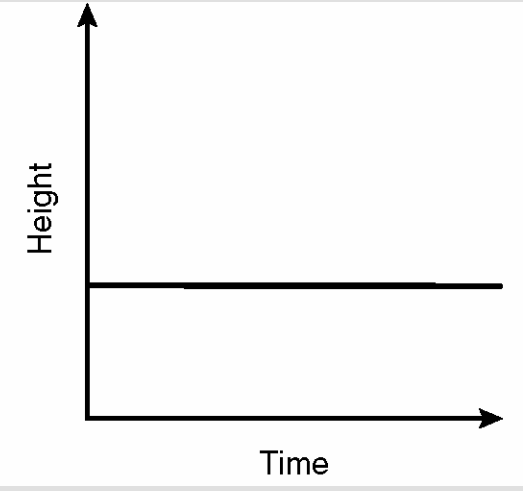
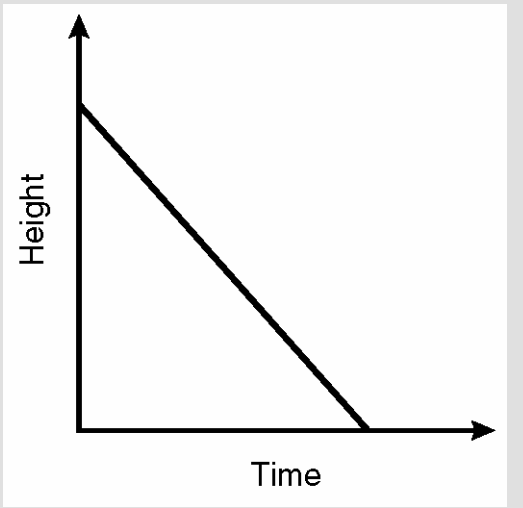
Student did not translate the graph correctly. The graph in answer choice A can be translated to: As time increases, the height of a burning candle increases.

B



Student did not translate the graph correctly. The graph in answer choice B can be translated to: As time increases, the height of a burning candle decreases then increases.

High School Math

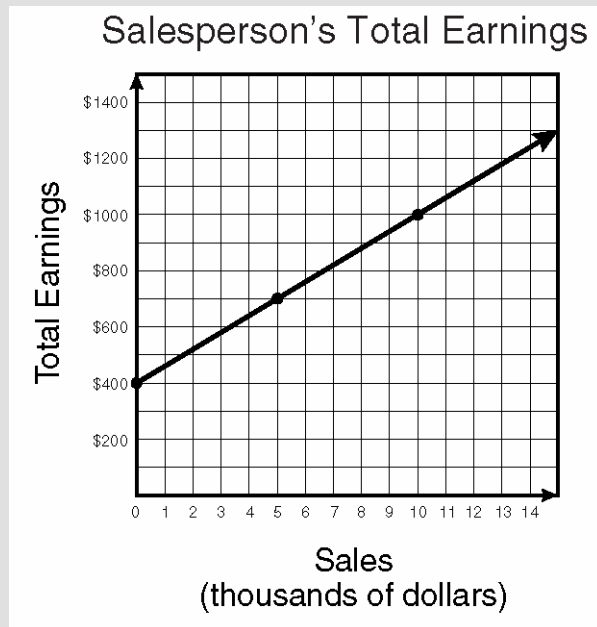
<p>C</p> 	<p>Student did not translate the graph correctly. The graph in answer choice C can be translated to: As time increases, the height of a burning candle remains the same.</p>
<p>D *</p> 	<p>Correct: Student translated the graph to read: As time increases the height of the candle decreases at a constant rate.</p>

High School Math

Question 47 – 2004 TAKS Released Test

Student Expectation: 09 – A.B2(D) In solving problems, the student collects and organizes data, makes and interprets scatterplots, and models, predicts, and makes decisions and critical judgments.

Which statement is true for the graph below?



A Ms. Goodlett will earn \$500 if she sells \$5000 worth of merchandise.	According to the graph selling \$5000 (5 on the x-axis) will result in \$700 in total earnings.
B Mr. Murphy will not earn any money if he does not sell any merchandise.	Students who choose this answer believe the statement, but did not read the graph. Zero sales will result in \$400 in total earnings.
C Mr. Laster will earn \$1000 if he sells \$1000 worth of merchandise.	Students who chose this answer may imagine Mr. Laster as self-employed. According to the graph, \$1000 worth of sales is about \$450 in total earnings.
D Ms. Cho will earn \$700 if she sells \$5000 worth of merchandise. *	According to the graph selling \$5000 (5 on the x-axis) will result in \$700 in total earnings.

High School Math

Question 45 – 2004 TAKS Released Test	
Student Expectation: 09 – A.B3(A) The student uses symbols to represent unknowns and variables.	
A class consists of 8 freshmen and 22 sophomores. Freshmen had an average of x points on a test, while sophomores had an average of y points. Which expression gives the average test score per student for the entire class?	
A $\frac{8x + 22y}{30}$ *	Correct: There are a total of 30 students so that is the divisor. To find the average, the sum of all scores must be in the numerator. If an average freshman score is x then $8x$ is to total points for freshmen. If an average sophomore score is y then $22y$ is the total number of points for sophomores. Total points is $8x + 22y$.
B $\frac{22x + 8y}{30}$	Reversed the x and y .
C $30\left(\frac{8}{x} + \frac{y}{22}\right)$	Students choosing this answer probably guessed without looking at the problem or decided on the answer choice that look the most complicated.
D $\frac{x + y}{2}$	Did not take into consideration that a weighted average is needed since there are a different number of freshmen and sophomores.

Question 43 – 2004 TAKS Released Test	
Student Expectation: 09 – A.B3(B) Given situations, the student looks for patterns and represents generalizations algebraically.	
Sue wants to write an expression that will always produce an even integer. Which of the following will always produce an even integer for any given integer, n ?	
A $2n + 1$	Nonexample $n = 2$ ($2*2 + 1 = 5$)
B $2n - 1$	Nonexample $n = 2$ ($2*2 - 1 = 3$)
C $n + 2$	Nonexample $n = 1$ ($1 + 2 = 3$)
D $2n$ *	By process of elimination answer choice D is correct, or examples might include $n = -2, 1, 0, 1, 2$.

Question 16 – 2004 TAKS Released Test	
Student Expectation: 09 – A.B4(A) The student finds specific function values, simplifies polynomial expressions, transforms and solves equations, and factors as necessary in problem situations.	
The area of a rectangle is $3x^2 + 14x + 8$, and the width is $x + 4$. Which expression best describes the rectangle's length?	
A $3x + 2$ *	Correct: Given one factor of the rectangle as $(x + 4)$, the second factor is the binomial resulting from using long division to divide the area by $(x+4)$, or the student could multiply the two binomials $(x+4)(3x+2)$.
B $2x + 4$	Combined the binomial $(x+4)$ and the answer choice $(2x+4)$ using addition to get an answer that looks similar to the first and last terms of the area.
C $2x + 2$	Combined the binomial $(x+4)$ and the answer choice $(2x+2)$ using addition for the first terms and multiplication for the second terms to get an answer that looks similar to the first and last terms of the area.
D $3x - 2$	Given one factor of the rectangle as $(x + 4)$, the student used long division incorrectly to find the other factor, or the student multiplied the two binomials $(x+4)(3x-2)$ incorrectly to get the area of the rectangle listed in the problem.

High School Math

Question 20 – 2004 TAKS Released Test	
Student Expectation: 09 – A.B4(A) The student analyzes situations and formulates systems of linear equations to solve problems.	
Simplify the algebraic expression $3(x + 3) - 2(x + 3)$.	
A $x + 3$ *	Correct: Distributed the 3 to $(x+3)$ and got $3x+9$. Distributed the -2 to $(x+3)$ and got $-2x-6$. Combining like terms $3x - 2x = x$ and $9-6 = +3$. Another method is to factor out the binomial $(x+3)$ from both terms to get $(x+3)(3-2) = 1(x+3)$ or $x + 3$.
B $x - 3$	Did not distribute the 3 to $(x+3)$ correctly. Got an answer of $3x+3$, then distributed the -2 to $(x+3)$ correctly and got $-2x-6$. Combining like terms $3x+3-2x-6 = x-3$.
C $-6x^2 - 54$	Students thinking this is multiplying two binomials may get this answer choice. Distribute 3 to $(x+3)$ and get $(3x+9)$. Distribute -2 to $(x+3)$ and get $(-2x-6)$. Multiply $(3x+9)(-2x-6)$ incorrectly, by ignoring the middle terms, to get answer choice C.
D $6x^2 + 3$	Complete both distributions incorrectly to get $(3x+9)$ and $(2x-6)$. Answer choice D is possible by multiplying the first terms in the binomials and adding the second terms.

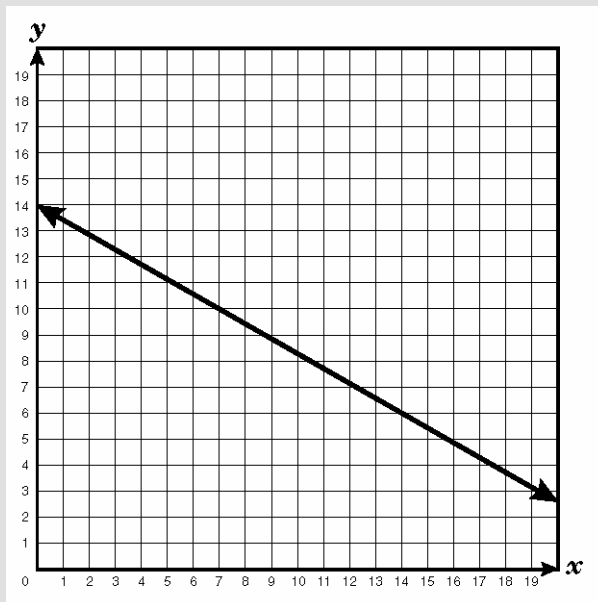
Question 13 – 2004 TAKS Released Test	
Student Expectation: 09 – A.C1(C) The student translates among and uses algebraic, tabular, graphical, or verbal descriptions of linear functions.	
Which function includes the data set $\{(2, 4), (6, 6), (12, 9)\}$?	
A $y = 2x$	Selecting this shows the student understands the concept because the equation works for the first number pair $(2,4)$, but the equation is not correct for the remaining two pair in the data set. The student did not complete the problem.
B $y = \frac{x}{2}$	Choosing this answer displays a lack of basic understanding in (x, y) labeling. In the first point $(2, 4)$, $y = 4$ which was substituted for x in the equation. The remaining two points in the data set do not work.
C $y = 2x - 9$	There is no arithmetic reason for choosing this answer. Student chose 2 and 9 because they are the first and last numbers in the data set.
D $y = \frac{x}{2} + 3$ *	Correct: Student correctly substituted the first value in each pair of numbers for x in the equation, performed the operations, and compared the result with the second value in the number pairs.

High School Math

Question 19 – 2004 TAKS Released Test

Student Expectation: 09 – A.C2(A) The student develops the concept of slope as rate of change and determines slopes from graphs, tables, and algebraic representations.

What is the slope of the linear function shown in the graph?



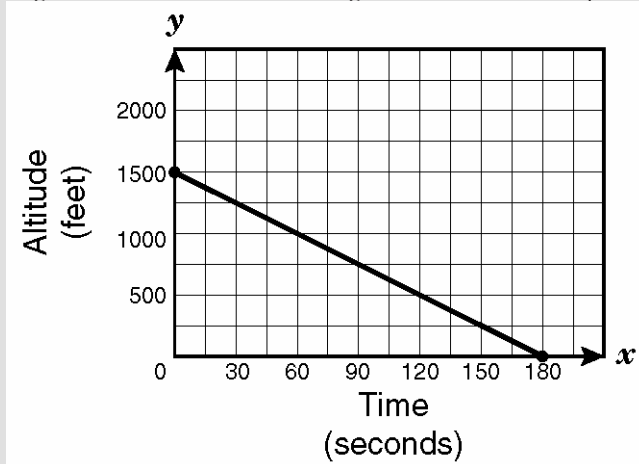
A $-\frac{7}{4}$	Reversed x and y in the definition of the slope.
B $-\frac{4}{7}$ *	Correct: The line decreases 4 units on the y-axis and increases 7 units on the x-axis.
C $\frac{4}{7}$	The negative sign was omitted.
D $\frac{7}{4}$	Reversed x and y in the definition of the slope and the negative sign was omitted.

High School Math

Question 34 – 2004 TAKS Released Test

Student Expectation: 09 – A.C2(B) The student interprets the meaning of slope and intercepts in situations using data, symbolic representations, or graphs.

The line segment on the graph shows the altitude of a landing airplane from the time its wheels are lowered to the time it touches the ground. Which of the following best describes the slope of the line segment?



A The plane descends about 1 foot per 8 seconds.	Reversed x and y.
B The plane descends about 8 feet per second. *	Correct: Choose any two points on the line and use the formula for the slope $m = \frac{y_2 - y_1}{x_2 - x_1}$. Intercepts are a good choice. The points (0, 1500) and (180, 0) are the y and x intercepts respectively. The substitute the four numbers into the formula and $m = \frac{0 - 1500}{180 - 0}$ where $m = -1500/180$ which equals $-8/1$.
C The plane descends about 1 foot per 2 seconds.	Did not look at the scale of the graph.
D The plane descends about 2 feet per second.	Reversed x and y and did not look at the scale of the graph.

Question 10 – 2004 TAKS Released Test

Student Expectation: 09 – A.C2(D) The student graphs and writes equations of lines given characteristics such as two points, a point and a slope, or a slope and y-intercept.

Which equation describes a line that has a y-intercept of 5 and a slope of $\frac{1}{2}$?

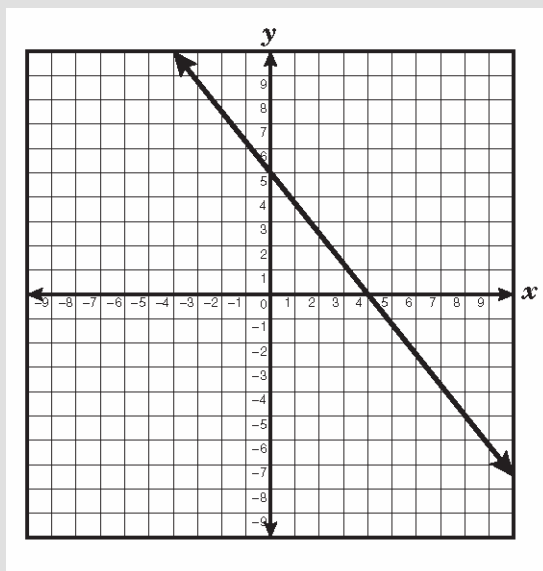
A $y = 5 + \frac{1}{2}x$ *	Correct: Student understands that the slope is the number multiplied with the independent variable and the y-intercept is a constant.
B $y = (5 + x)\frac{1}{2}$	Incorrectly used the point-slope form of an equation from the formula chart.
C $y = 5x + \frac{1}{2}$	Confused y-intercept with slope and chose the equation that shows the product of the y-intercept and independent variable, x, instead of the product of the slope and x.
D $y = (5x + 1)\frac{1}{2}$	Incorrectly used the point-slope form of the equation from the formula chart.

High School Math

Question 42 – 2004 TAKS Released Test

Student Expectation: 09 – A.C2(E) The student determines the intercepts of linear functions from graphs, tables, and algebraic representations.

What are the x - and y -intercepts of the function graphed below?



A (4, 0) and (5, 0)	Incorrectly put the nonzero number first in the ordered pair.
B (4, 0) and (0, 5) *	Correct: The student understands naming points on a coordinate grid.
C (0, 4) and (5, 0)	Reversed the x and y coordinates.
D (0, 4) and (0, 5)	Incorrectly put the nonzero number last in the ordered pair.

Question 7 – 2004 TAKS Released Test

Student Expectation: 09 – A.C3(A) The student analyzes situations involving linear functions and formulates linear equations or inequalities to solve problems.

A weather balloon is launched from a height of 475 feet above sea level. If the balloon rises at a constant rate of 85 feet per minute, which equation could be used to determine t , the time in minutes it will take the balloon to reach a height of 9245 feet above sea level?

A $9245 = 85 + 475t$	Confused slope (85) with y-intercept (475).
B $9245 = 85(t + 475)$	Incorrect use of the point-slope form of an equation from the formula chart.
C $9245 = 475 + 85t$ *	Correct: Wrote a correct equation with 85 as the slope multiplied by t minutes with a y-intercept of 475 feet.
D $9245 = (475 + 85)t$	Chose the answer with 475, 85, and t in the same order as they are written in the problem.

High School Math

Question 17 – 2004 TAKS Released Test

Student Expectation: 09 – A.C3(B) The student investigates methods for solving linear equations and inequalities using concrete models, graphs, and the properties of equality, selects a method, and solves the equations and inequalities.

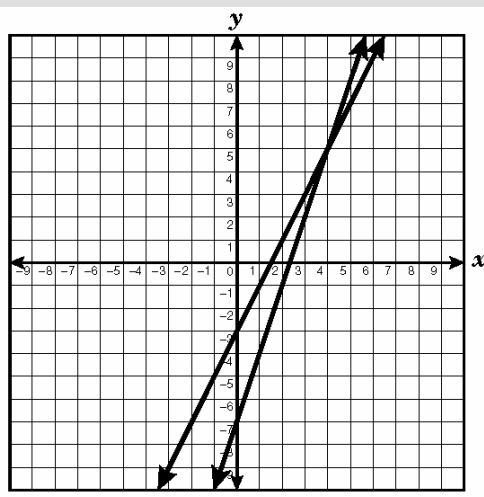
If $(x, -4)$ is a solution to the equation $4x - 5y = 8$, what is the value of x ?

A - 4.8	The initial substitution was wrong. $4(-4) - 5y = 8$. The (-4) should have been substituted for y and not x . If all steps are completed correctly after the incorrect substitution, the answer will be -4.8 . A second error is the student did not realize -4.8 would be the value of y and not x , as asked for in the problem.
B - 3 *	Correct: The substitution was correct for y to get $4x + 20 = 8$. Twenty was subtracted from both sides resulting on $4x = -12$. Both sides of the equation were divided by 4 to get $x = -3$.
C 1.6	Did not substitute a value for y , and incorrectly solved for x by dividing by 5. [$8/5=1.6$]
D 7	Set-up the problem with the correct substitution of $4x-5(-4) = 8$. Next step is incorrect $4x - 20 = 8$. The correct equation is $4x + 20 = 8$. If all steps are completed correctly after the $4x - 20 = 8$ error, the result is $x = 7$.

Question 36 – 2004 TAKS Released Test

Student Expectation: 09 – A.C3(B) The student investigates methods for solving linear equations and inequalities using concrete models, graphs, and the properties of equality, selects a method, and solves the equations and inequalities.

The graphs of the linear equations $y = 2x - 3$ and $y = 3x - 7$ are shown below.



If $2x - 3 = 3x - 7$, what is the value of x ?

A 4 *	Correct: Two methods to solve the problem. The first is to solve for x in the equation $2x-3=3x-7$. Subtracting $2x$ from both sides of the equation results in the equation $-3 = x - 7$. Adding 7 to both sides of the equation results in $4 = x$. The alternative method is to find the points where the two lines cross on the graph. It seems that $(4, 5)$ is a reasonable estimation. From the point of intersection on the graph, $x = 4$ and $y = 5$.
B 5	The student estimated the point of intersection to be $(4,5)$, but chose the y -value of the point.
C 9	The point of intersection is estimated from the graph to be $(4,5)$. Answer choice C is realized by adding the coordinates 4 and 5 to get 9.
D 10	Using the equation $2x - 3 = 3x - 7$, the student subtracted $2x$ from both sides of the equation but omitted the negative sign from the number three resulting in the equation $3 = x - 7$. Adding 7 to both sides of the equation results in $10 = x$ which is incorrect.

High School Math

Question 5 – 2004 TAKS Released Test	
Student Expectation: 09 – A.C3(C) For given contexts, the student interprets and determines the reasonableness of solutions to linear equations and inequalities.	
A recycling center pays \$0.35 per pound of glass that it receives. If students at Falcon High School want to raise \$500 in a glass-recycling project, what is a reasonable number of pounds of glass they must collect?	
A 750 lb	Estimated the solution.
B 175 lb	Multiplied 500×0.35 .
C 500 lb	Chose the dollar amount from the problem as the solution.
D 1500 lb *	Correct: The formula is $500 = 0.35g$, where g is the amount of glass in pounds. Solving for g $500/0.35 = g$ $g = 1428 \text{ pounds of glass}$

Question 39 – 2004 TAKS Released Test	
Student Expectation: 09 – A.C4(A) The student analyzes situations and formulates systems of linear equations to solve problems.	
The Frosty Ice-Cream Shop sells sundaes for \$2 and banana splits for \$3. On a hot summer day, the shop sold 8 more sundaes than banana splits and made \$156. Which system of equations could be used to find the number of sundaes, s , and banana splits, b , that the shop sold that day?	
A $2s + 3b = 156$ $s = b + 8$ *	Correct: Equation $s = b + 8$ is correct because the shop sold 8 more sundaes than banana splits which means one would have to add 8 banana splits to equal the number of sundaes. Equation $2s + 3b = 156$ is correct because a sundae costs \$2 so the total amount of money made selling sundaes is $2s$; a banana split costs \$3 so the total amount of money made selling banana splits is $3b$. The shop made \$156 selling sundaes and banana splits so $2s + 3b = 156$.
B $2b + 3s = 156$ $s + b = 8$	The first equation is incorrect because it states that a banana split costs \$2 ($2b$) and it costs \$3. Sundaes are \$2 and not \$3 as stated in the equation. The second equation states that the combined number of sundaes and banana splits sold is 8 ($s + b = 8$), but the problem states 8 more sundaes than banana splits.
C $2s + 3b = 8$ $s = b + 156$	The first equation is incorrect because it states that the total amount of money made selling sundaes and banana splits is \$8. The second equation states that the 156 more sundaes were sold than banana splits.
D $2s + 3b = 156$ $b - s = 8$	The first equation is correct. The second equation is not correct. The second equation shows that more banana splits were sold than sundaes. In fact, the equation shows that 8 more banana splits were sold than sundaes.

High School Math

Question 2 – 2004 TAKS Released Test	
Student Expectations : 09-A.D1(C) The student investigates, describes, and predicts the effects of changes in c on the graph of $y = x^2 + c$.	
How would the graph of the function $y = x^2 + 4$ be affected if the function were changed to $y = x^2 + 1$?	
A The graph would shift 3 units up.	Got an answer of +3 for “c” by completing the operation $+4 - +1$ and translated “+3” as three units up.
B The graph would shift 3 units down. *	Correct: Visualized the function as a parabola with vertex at (0,4) and shifted three units down where the vertex is at (0, 1).
C The graph would shift 3 units to the right.	Confused the x and y axes and got an answer of +3 for “c” by completing the operation $+4 - +1$ and translated “+3” as three units right.
D The graph would shift 3 units to the left.	Confused the x and y axes.

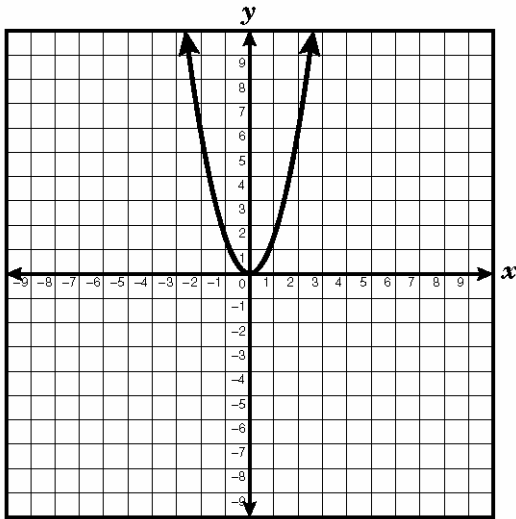
High School Math

Question 8 – 2004 TAKS Released Test

Student Expectation: 09 – A.D1(C) The student investigates, describes, and predicts the effects of changes in c on the graph of $y = x^2 + c$.

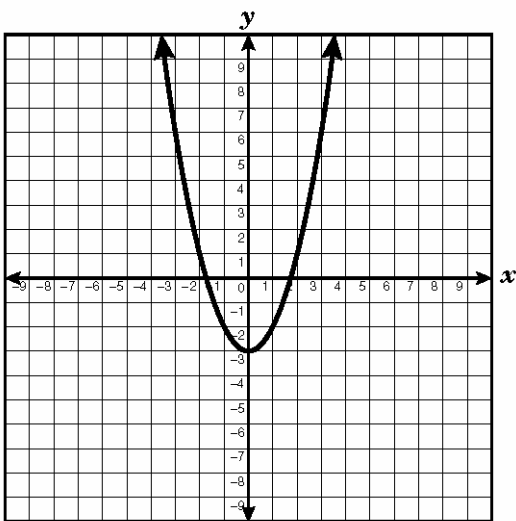
Which graph shows a function $y = x^2 + c$ when $c < -1$?

A



Chose the parent function.

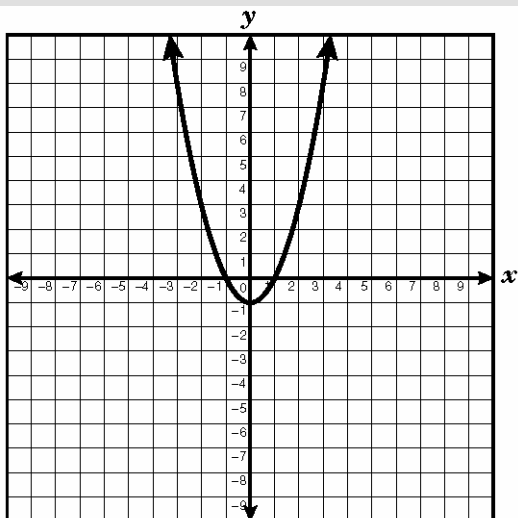
B *



Correct: $c = -3$ which is less than -1 .

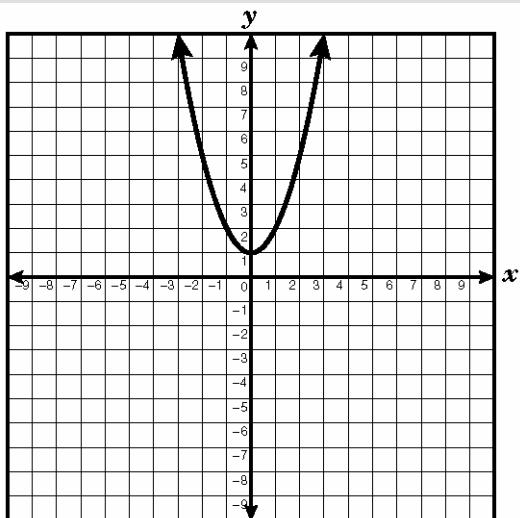
High School Math

C



c is equal to -1 on the graph; not less than -1 .

D



Incorrectly read $c < -1$ as " c is greater than -1 ".

High School Math

Question 9 – 2004 TAKS Released Test

Student Expectation: 09 – A.D3(A) The student uses patterns to generate the laws of exponents and applies them in problem-solving situations.

Which expression is equivalent to $\frac{(8x^3)(2x^5)}{4x^6}$?

A $4x^9$	Multiplied the powers in the numerator $(3 * 5) = 15$ and then subtracted the power in the denominator $15 - 6 = 9$.
B $4x^2$ *	Correct: Used the correct operations with the coefficients $(8*2)/4 = 4$ and also used the correct operation for the exponents $(3 + 5 - 6) = 2$.
C $2x^8$	Divided the coefficient 8 by 4 to get 2 and added the exponents in the numerator to get 8.
D $2x^4$	Divided the coefficient 8 by 4 to get 2. The exponent was incorrectly derived by multiplying the coefficient (8) by the exponent (3) and dividing by the exponent (6). Another possible explanation is multiplying the coefficient (2) with the exponent (5) and subtracting the exponent (6).

Question 44 – 2004 TAKS Released Test

Student Expectation: 09 – A.D3(A) The student uses patterns to generate the laws of exponents and applies them in problem-solving situations.

If $y = x^3$, what is the equivalent to x^{12} ?

A y^{36}	The student multiplied the two exponents to get y^{36} .
B y^{15}	The student added the two exponents to get y^{15} .
C y^9	The student added the two exponents to get y^9 .
D y^4 *	Correct: Raising both sides of the equation $y = x^3$ to the 4 th power $(y)^4 = (x^3)^4$ is $y^4 = x^{12}$.