Texas Assessment of Knowledge and Skills

MATHEMATICS

Grade 9

2010 Released Items

1 The table below shows selected values of a functional relationship between x and $f(x)$.

x	$f(x)$
–3	11
–1	–5
0	–7
2	1
4	25

Which equation describes this functional relationship?

A $f(x) = 4x - 7$

B $f(x) = -8x - 13$

C $f(x) = 2x^2 - 7$

D $f(x) = x^2 + 2$

2 Danny wants an average grade of at least 93 for his four algebra exams. The scores for his first three exams are 94, 89, and 96. Which inequality can be used to find x, the minimum grade Danny needs to earn on his fourth exam to have an average grade of at least 93?

A $\dfrac{94 + 89 + 96 + x}{4} \geq 93$

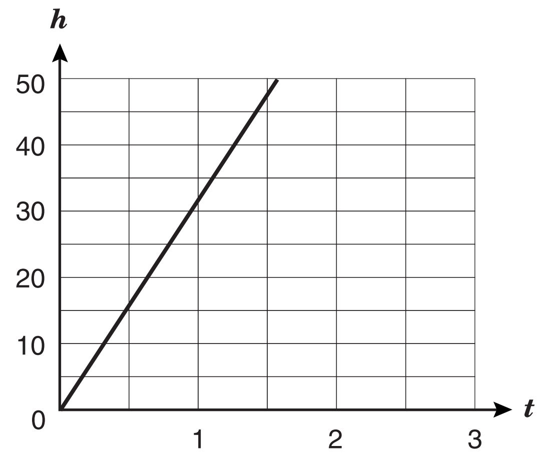
B $\dfrac{94 + 89 + 96 + x}{4} < 93$

C $\dfrac{94 + 89 + 96}{3} + x \geq 93$

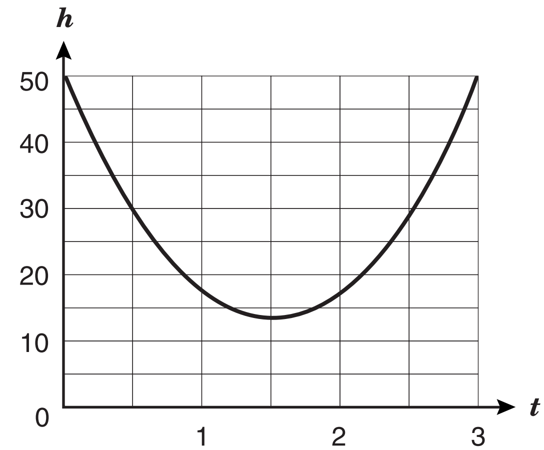
D $\dfrac{94 + 89 + 96}{3} + x < 93$

3 The height, h, of a football when kicked with respect to time, t, is described by the function $h = -16t^2 + 48t$. Which graph shows the correct sketch of this function?

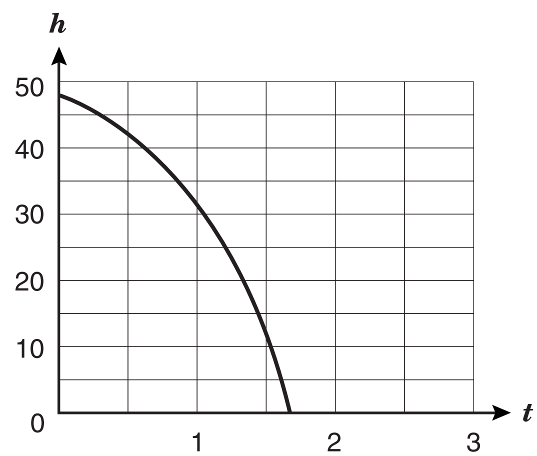
A



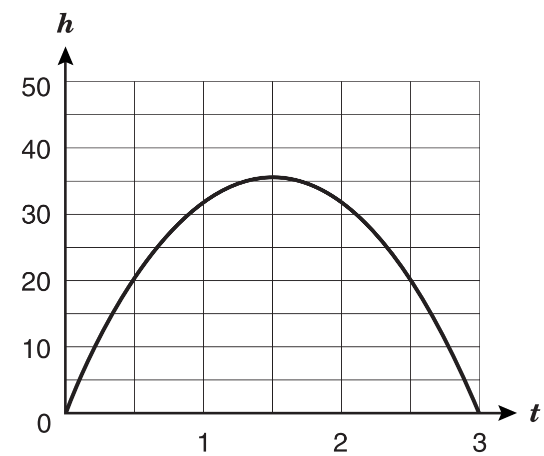
C



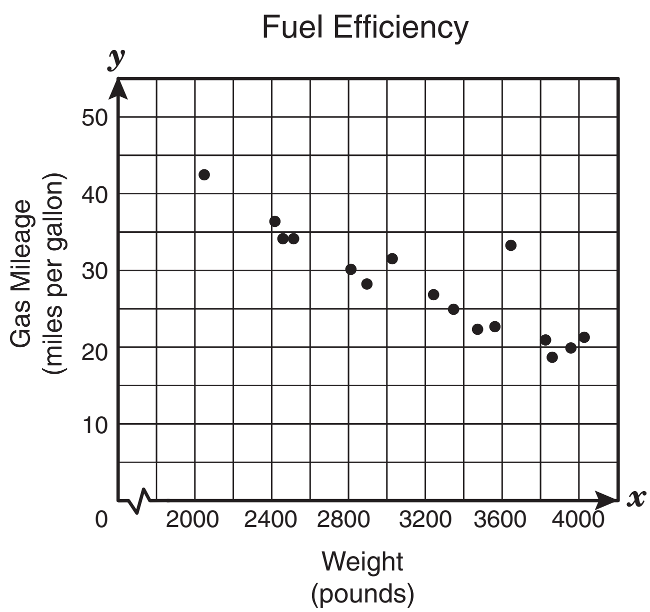
B



D



1 The scatterplot below shows the gas mileage and weight of different vehicles.



Which of the following is the best interpretation of this scatterplot?

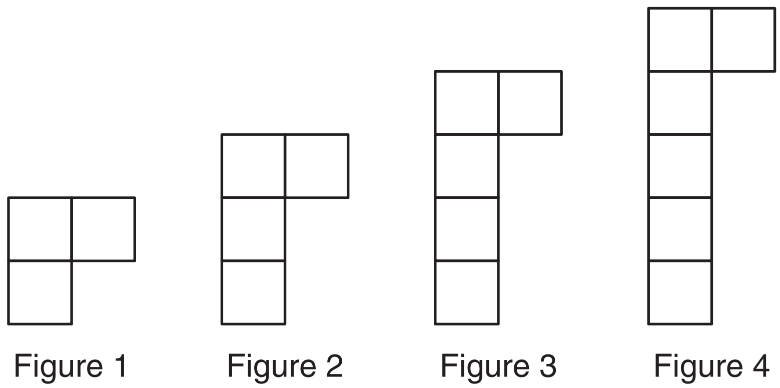
A As the weight of the vehicle increases, the gas mileage stays the same.

B Vehicles that weigh the least seem to have higher gas mileage.

C Vehicles that weigh the most seem to have higher gas mileage.

D As the weight of the vehicle decreases, the gas mileage stays the same.

2 Nadia used identical square tiles to design the four figures shown below.



Which expression can be used to determine the number of square tiles used in each figure if n represents the number assigned to the figure?

A $3n$

B $n^2 + 2$

C $2n + 1$

D $n + 2$

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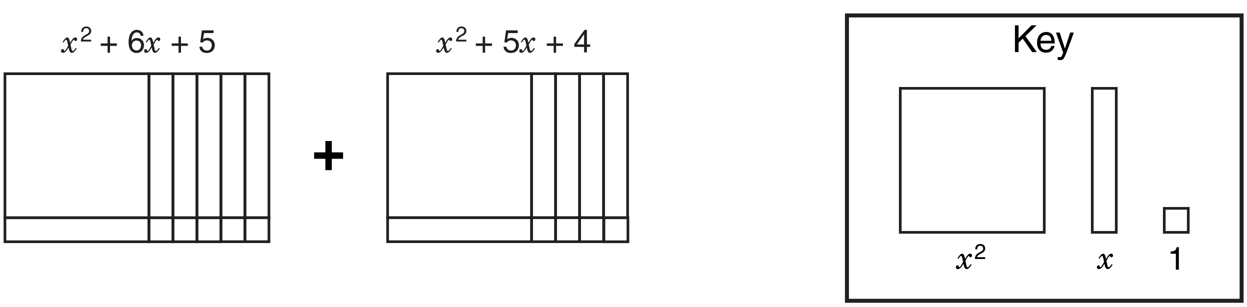
3 Look at the polynomial expression modeled below with algebra tiles.



Which of the following expressions is equivalent to the polynomial expression modeled above?

A $2x^2 + 7x + 9$

B $2x^4 + 11x^2 + 9$

C $2x^4 + 30x^2 + 20$

D $2x^2 + 11x + 9$

1 Which equation generates a graph containing the set of ordered pairs shown below?

$$\{(-15, 12), (-5, 8), (5, 4), (10, 2)\}$$

A $y = -\frac{3}{5}x + 3$

B $y = -\frac{2}{5}x + 6$

C $y = -\frac{1}{5}x + 9$

D $y = -\frac{4}{5}x$

2 If y varies directly with x and y is 32 when x is 12, which of the following represents this situation?

A $y = \frac{8}{3}x$

B $y = 20x$

C $y = \frac{3}{8}x$

D $y = 44x$

1 Ida has a budget of $25 to spend on flowers. A package of flowers costs $1.99, and a hanging basket of flowers costs $5.10. Both prices include tax. Which inequality can be used to determine p, the number of packages of flowers she can buy if she also buys a hanging basket of flowers?

A $1.99p - 5.10 \leq 25$

B $5.10 + 1.99p \leq 25$

C $(1.99 + 5.10)p \leq 25$

D $5.10 - 1.99p \leq 25$

2 A waitress at a local restaurant earns $3.25 per hour plus tips. In two weeks she earned a total of $720, including $531.50 in tips. How many hours did the waitress work during this 2-week period?

A 58 h

B 82 h

C 94 h

D 111 h

3 The sum of 2 integers is 60. The first integer, x, is 6 more than half the second integer, y. Which system of linear equations best represents the given information?

A $x + y = 60$

$y = \frac{1}{2}x + 6$

B $x + y = 60$

$x = \frac{1}{2}y - 6$

C $x + y = 60$

$y = \frac{1}{2}x - 6$

D $x + y = 60$

$x = \frac{1}{2}y + 6$

1 When the function $y = x^2 + \frac{3}{4}$ is transformed into the function $y = x^2 + \frac{7}{4}$, each point on the graph of $y = x^2 + \frac{3}{4}$ is translated —

A 3 units down to create the graph of $y = x^2 + \frac{7}{4}$

B 1 unit up to create the graph of $y = x^2 + \frac{7}{4}$

C 3 units up to create the graph of $y = x^2 + \frac{7}{4}$

D 1 unit down to create the graph of $y = x^2 + \frac{7}{4}$

2 Which expression best describes the volume of a rectangular prism that has a width of $3a^3bc^4$ units, a length of $7a^5b^2c^2$ units, and a height of $4ab^3c$ units?

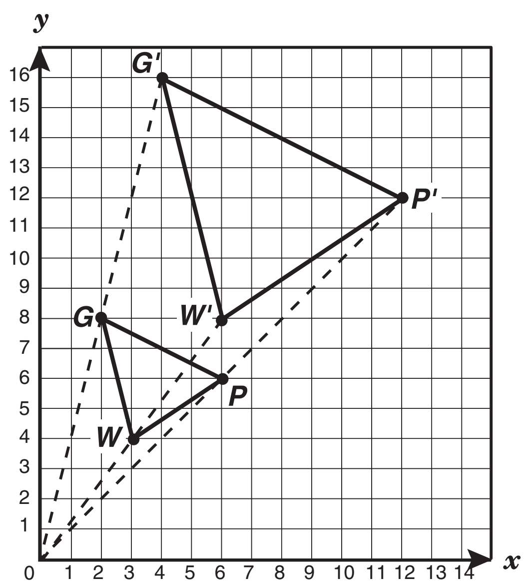
A $84a^9b^6c^7$ units^3

B $14a^{15}b^6c^8$ units^3

C $84a^8b^5c^6$ units^3

D $14a^9b^6c^7$ units^3

1 $\Delta G'P'W'$ in the graph below is a dilation of ΔGPW, using the origin as the center of dilation.



Which scale factor was used to create $\Delta G'P'W'$?

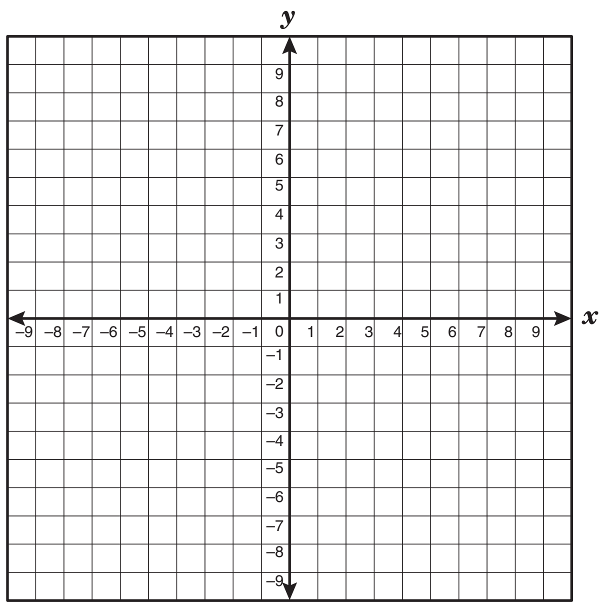
A $\frac{1}{2}$

B $\frac{4}{3}$

C 2

D 4

2 Parallelogram *BLPS* has vertices B $(-3, -1)$, L $(-1, 2)$, P $(3, 0)$, and S $(1, -3)$.



If parallelogram *BLPS* is dilated by a scale factor of 3, with the origin as the center of dilation, what will be the coordinates of L'?

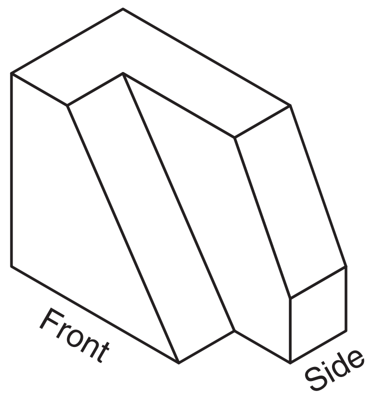
A $(0, 5)$

B $(9, 0)$

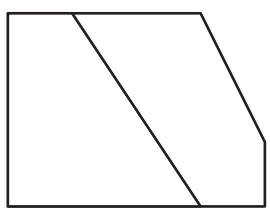
C $(-3, 6)$

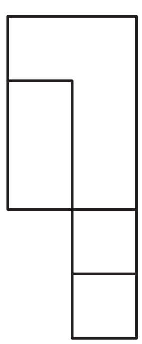
D $(3, -9)$

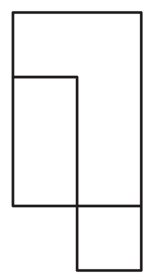
1 The drawing below shows a 3-dimensional figure.

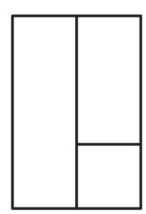


Which does not represent a top, front, or side view of this 3-dimensional figure?

A 

B 

C 

D 

2 An architect is designing a scale model for a new office building. The rectangular base of the building will be 180 feet wide by 240 feet long. If the architect built the model using a scale in which $\frac{1}{4}$ inch represents 2 feet, what are the dimensions of the base of the model?

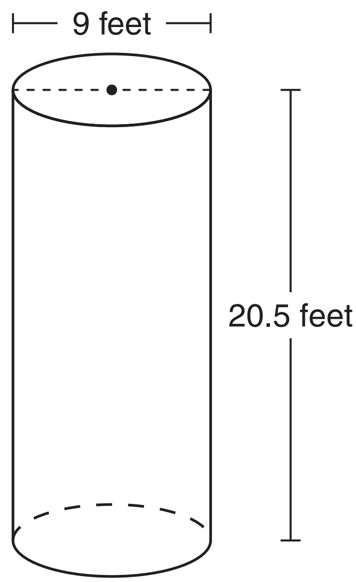
A $7\frac{1}{2}$ in. by 10 in.

B 15 in. by 20 in.

C $22\frac{1}{2}$ in. by 30 in.

D 55 in. by 60 in.

1 Look at the cylinder shown below.



Which is closest to the lateral surface area of this cylinder?

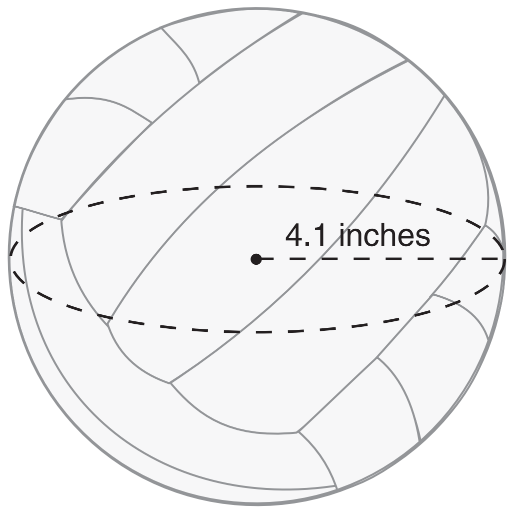
A 580 ft^2

B 707 ft^2

C 1304 ft^2

D 1159 ft^2

2 Look at the drawing of a volleyball shown below.



Which is closest to the volume of this volleyball?

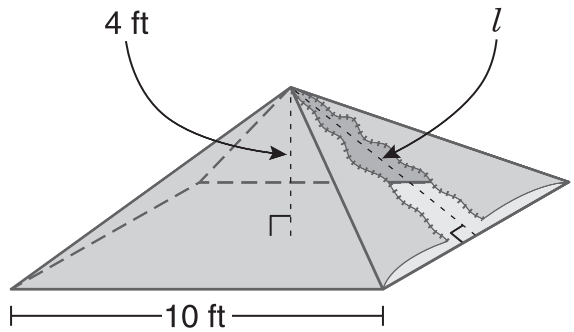
A 53 in.^3

B 289 in.^3

C 211 in.^3

D 162 in.^3

3 Mr. Kozar was planning on using the square pyramid tent shown below to go camping. He needs to replace the tent's zipper.



If the zipper represents the slant height, l, of the tent, which of the following is closest to the length of the zipper that Mr. Kozar needs to replace?

A 6.4 ft

B 10.8 ft

C 9.2 ft

D 14.0 ft

1 Mr. Pérez had a fair cube with a different mathematician's name labeled on each face. Each student in his math classes rolled the cube once to determine which mathematician would be the subject of that student's report. The results are shown in the table below.

Mathematician Cube Results

Name	Frequency
Pythagoras	17
Hypatia	16
Archimedes	14
Agnesi	19
Gauss	16
Germain	14

Which name or names on the cube had the same experimental probability as theoretical probability of landing faceup?

A Pythagoras

B Agnesi

C Hypatia and Gauss

D Archimedes and Germain

2 The high school grade point averages (GPAs) of 10 recent graduates are shown below. All of these graduates applied for the same job, but only 3 were hired.

GPAs of Applicants Hired
3.17
4.00
3.85

GPAs of Applicants Not Hired
2.84
2.95
2.82
2.88
3.25
2.98
3.21

Based on the information in the table, which statement is true?

A All applicants with a GPA of 3.30 or lower were not hired.

B All applicants with a GPA of 3.00 or higher were hired.

C The median GPA of all applicants was greater than the mean GPA of all applicants.

D Each applicant who was hired had a GPA above the median GPA of all applicants.

1 Ted has 2 spinners. The first spinner is divided into 4 equal sectors. The second spinner is divided into x equal sectors, where x is 1 less than twice the number of sectors on the first spinner. The sectors of the first spinner are numbered from 1 to 4. The sectors of the second spinner are numbered from 1 to x. If Ted spins both spinners once, what is the probability that both spinners will land on 3?

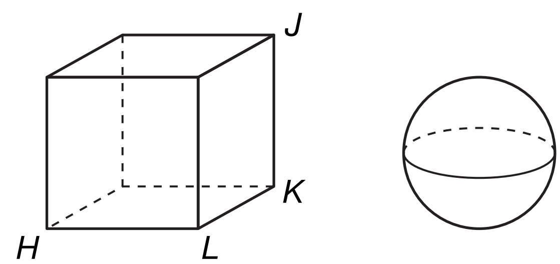
A $\frac{1}{4}$

B $\frac{1}{28}$

C $\frac{1}{7}$

D $\frac{1}{36}$

2 The cube below is constructed so that the sphere shown would fit inside it, touching the center of each face of the cube at exactly one point.



Which of the following lengths best represents the diameter of the sphere?

A *HK*

B *LK*

C *LJ*

D *HJ*

Item Number	Student Expectation	Correct Answer
OBJECTIVE 1		
1	A.1 (B)	C
2	A.1 (C)	A
3	A.1 (D)	D
OBJECTIVE 2		
1	A.2 (D)	B
2	A.3 (B)	D
3	A.4 (A)	D
OBJECTIVE 3		
1	A.5 (C)	B
2	A.6 (G)	A
OBJECTIVE 4		
1	A.7 (A)	B
2	A.7 (B)	A
3	A.8 (A)	D
OBJECTIVE 5		
1	A.9 (C)	B
2	A.11 (A)	A
OBJECTIVE 6		
1	8.6 (A)	C
2	8.6 (B)	C
OBJECTIVE 7		
1	8.7 (A)	B
2	8.7 (B)	C
OBJECTIVE 8		
1	8.8 (A)	A
2	8.8 (C)	B
3	8.9 (A)	A
OBJECTIVE 9		
1	8.11 (B)	C
2	8.13 (B)	D
OBJECTIVE 10		
1	8.14 (B)	B
2	8.15 (A)	B