TAKS Grade-Level Practice Test

1 Mrs. Austen has two retirement accounts. In one account, she placed \$15,000. This account decreased in value by 6.5% over the first year. In her other account, she placed *d* dollars, and this account gained 4% in value in the first year. Which equation describes v, the total value of her retirement accounts after the first year?

A
$$v = 15,000(1.065) + d(0.96)$$

B
$$v = 15,000(0.935) + d(1.04)$$

- **C** v = -15,000(1.065) d(0.96)
- **D** v = 15,000(1.065) + d(1.04)
- 2 A circle centered at (6, -8) passes through the point (-2, -6). What is the approximate area of the circle?
 - F 816 square units
 - G 670 square units
 - H 214 square units
 - **J** 63 square units
- **3** Find the slope of the line represented by the equation 4x + 3y = 5.
 - **A** $\frac{4}{3}$
 - **B** $-\frac{4}{3}$ **C** $-\frac{3}{4}$
 - **D** $\frac{3}{4}$

- 4 Which statement describes what happens to the graph of $y = ax^2$ when the value of *a* is changed from -2 to -4?
 - **F** The graph is translated down 2 units.
 - **G** The graph narrows.
 - **H** The graph is reflected across the *x*-axis.
 - **J** The graph is translated to the left 2 units.
- **5** The following points can be used to determine several lines:

P(6,3), *Q*(-2, -1), *R*(4, -2), *S*(0,6), *T*(0,2), and *V*(-5,1)

Which pair of lines intersect to form right angles?

- **A** \overrightarrow{PQ} and \overrightarrow{RS}
- **B** \overleftarrow{QR} and \overleftarrow{RS}
- **C** \overrightarrow{RS} and \overrightarrow{ST}
- **D** \overleftarrow{ST} and \overleftarrow{TV}



6 Debra is planning to make a circle graph of the planned college majors of all the students in her high school. The table below summarizes her data.

Major	Number of Students	
Engineering	49	
English	65	
Communications	35	
Biology	86	
Undecided	15	

To the nearest tenth of a degree, what central angle should Debra use for the section representing English?

F	26°	Н	93.6°
G	65°	J	123.8°

- 7 Which function represents the line containing the point (1, -2) with a slope of 4?
 - **A** y = 4x + 4**B** v = 4x - 6**C** y = 4x + 1**D** y = 4x - 2
- 8 Steve builds computer systems for a living. He has weekly expenses of \$600 plus an additional \$30 for each computer. If he charges \$90 for each computer he builds, how many computers does he have to build each week before he can make a profit?

F	5	Η	7
G	6	J	10

9 Triangles ABC and DEF are similar.



Which of the following is true about the triangles?

- **A** $m \angle F = m \angle B$
- **B** $m \angle D = m \angle C$
- **C** $\frac{DF}{AC} = \frac{AB}{DE}$
- **D** $\frac{BC}{DE} = \frac{AC}{DE}$

- 10 David is three times as old as Jane. Jane is 5 years younger than Bob. Together, their ages add up to 50. Which equation can be used to find Bob's age?
 - **F** x + 3x 4x = 50**G** x + (x - 5) + 3(x - 5) = 50**H** x + (x - 5) + (x - 5) = 50
 - **J** x + (x + 3) 5x = 50
- **11** What is the solution set for the equation $5(4x-3)^2 = 20?$
 - **A** $\left\{\frac{5}{4}, -\frac{1}{4}\right\}$
 - **B** $\left\{-\frac{5}{4}, -\frac{1}{4}\right\}$

$$\mathbf{C} \quad \left\{\frac{5}{4}, \frac{1}{4}\right\}$$

D $\left\{-\frac{5}{4},\frac{1}{4}\right\}$



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12 Triangle *ABC* is shown below. 14 What is the approximate area of the unshaded part of the circle shown below? A 30 in 50 cm B **F** 6.9 in.^2 **H** 43.3 in.² **G** 21.1 in.² **J** 50.2 in.² How much longer is \overline{AC} than \overline{BC} ? F 7 cm **G** 15 cm H 25 cm 15 Which ordered pair represents coordinates of a vertex of the polygon graphed below? **J** 43 cm 2 **13** Steve's home town has 15,000 more people than twice as many people as Paul's home -2 $4\hat{x}$ _4 0 2 town. If x represents the population of Paul's home town, which expression can be -2 used to determine the population of Steve's 4 home town? **A** 2x + 15,000**A** (2, −3) **C** (2, -2)**B** 2(x - 7,500)**B** (−2, 1) **D** (4, −1) **C** $\frac{x - 15,000}{2}$ **D** 2x - 30,00016 Jenny can spend no more than \$7 on school supplies. Each folder, f, costs \$0.50 and each pen, p, costs \$2. Which of the following inequalities best represents the number of folders and pens she can purchase? **F** $2p \ge 7 + 2f$ **G** $0.5f + 2p \le 7$

- **H** 2.5(f + p) < 7**J** $0.5f \ge 7 + 2p$
- GO ON

Algebra 2

17 A model rocket was fired upward at an initial speed of 50 meters per second. The function $h = 50t - 4.9t^2$ shows the relationship between the time elapsed and the rocket's height above the ground, where *t* is the time in seconds and *h* is the height in meters. The graph of this function is shown below.



What is the best conclusion about the rocket's movement?

- A The rocket returned to the ground in about 10 seconds after it was fired.
- **B** The speed of the rocket was greatest at about 5 seconds after it was fired.
- C The rocket traveled 100 meters.
- **D** The rocket never reached the ground after being fired.
- 18 Admission to the state park costs \$4 per person plus \$6 per vehicle for parking. This relationship can be described by the equation f(p) = 4p + 6, where p is the number of people coming to the park in a given vehicle. Which is the dependent quantity in this functional relationship?
 - **F** The cost of parking the car
 - G The size of the car
 - H The total cost of going to the park
 - \mathbf{J} The number of people going to the park

19 Which of these equations describes a relationship in which every positive number *x* corresponds to a positive number *y*?

A
$$y = -x^2$$

B $y = (-x)^2$
C $y = x^2 - 2$
D $y = x^3 - 2$

- **20** A bicycle shop is analyzing a chart showing the bicycles sold for the last month. Which measure of data should they use to determine what was the most popular model sold?
 - F Range
 - G Mode
 - H Median
 - J Mean
- **21** Julia has a placemat with the dimensions shown below.



To the nearest square centimeter, what is the area of this placemat?

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



22 Lynn bought a computer printer on sale for \$250. The printer cost \$280 before the sale. Which expression can be used to determine the percent of the original price that Lynn saved on the purchase of the printer?

$$\mathbf{F} \quad \frac{(280 - 250)}{250} \times 100$$
$$\mathbf{G} \quad \frac{250}{280} \times 100$$
$$\mathbf{H} \quad \frac{(280 - 250)}{280} \times 100$$
$$\mathbf{J} \quad \frac{280}{250} \times 100$$

23 What transformation(s) are used to make the following pattern from one of its hexagonal tiles?



- A Reflection only
- **B** Translation and reflection
- **C** Translation only
- **D** Rotation and translation
- 24 Mrs. Sanders earns \$600 in salary per week at the furniture store, plus 5% of the total sales she makes for the week. How much must her total weekly sales be in order for her to earn exactly \$900?
 - **F** \$3,000
 - **G** \$6,000
 - **H** \$9,000
 - **J** \$18,000

25 A function is represented in the mapping diagram below.



Which of the following is NOT another correct representation of this function?

- A The domain is $\{-1, -2, -3, -4\}$ and $f(x) = x^2$
- **B** The domain is $\{-1, -2, -3, -4\}$ and $f(x) = -x^2$
- **C** *x* is a negative integer greater than -5 and $f(x) = x^2$
- **D** {(-1, 1), (-2, 4), (-3, 9), (-4, 16)}
- **26** The net below shows the surface of a cube.



Which of the following pairs of faces are parallel?

- **F** Faces with the letters P and T
- **G** Faces with the letters Q and U
- H Faces with the letters R and S
- **J** Faces with the letters U and P



- **27** What is the *y*-intercept of the function graphed below?



- **28** As a sales clerk at a music store, Holly makes \$6 per hour and 30% of the price of the CDs she sells. If she works for 5 hours, how much does she need to sell to make exactly \$105?
 - **F** \$250.00
 - **G** \$100.00
 - **H** \$70.00
 - **J** \$21.00
- **29** In the triangle shown below, what is the approximate length of \overline{GH} ?



- **A** 21.0 in.
- **B** 15.3 in.
- **C** 13.1 in.
- **D** 10.2 in.

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Algebra 2

30 Which type of function is graphed below?



- **F** Quadratic
- G Exponential
- H Linear
- J Logarithmic
- **31** Which equation best represents the relationship shown in the table below?

x	-3	-1	0	1
у	3	7	9	11

A
$$y = x + 9$$

B $y = x + 8$

C
$$y = 2x + 9$$

D
$$y = 11x$$



10 in.

7 in.

34 What is the area of the figure shown below?

32 The following table shows the number of faces, edges, and vertices for the five regular solids.

	Faces	Edges	Vertices
Tetrahedron	4	6	4
Cube	6	12	8
Octahedron	8	12	6
Dodecahedron	12	30	20
Icosahedron	20	30	12

Based on the data in this chart, which of the following algebraic formulas correctly links faces (F), edges (E), and vertices (V) for the regular solids?

F $3FV = 2E^2$

$$\mathbf{G} \ 2F + V = 2E$$

H
$$FV = 4E$$

$$\mathbf{J} \quad F + V - 2 = E$$

G 102.5 in.² **H** 98.5 in.² **J** 87.5 in.²

´5 in. [

3 in.

F 135.0 in.²

35 Which of the following best represents the front view of the figure shown below?





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- 33 At the convenience store, a gallon of milk and a bottle of water cost a total of \$4.15. The cost of 4 gallons of milk and 3 bottles of water is \$14.60. Which set of equations can be used to determine *m*, the price of a gallon of milk, and w, the price of a bottle of water?
 - **A** m + w = 4.154m + 3w = 14.60**B** m + w = 4.153m + 3w = 14.60
 - **C** 4m + 3w = 4.15m + w = 14.60

$$m + w - 14.00$$

D $7(m + w) = 4.15$

$$4m + 3w = 14.60$$

- **36** The line represented by the equation y = x 1 is shown below.



Which of the following best describes the change if the line becomes y = 3x - 1?

- **F** The *x*-intercept increases.
- **G** The *y*-intercept increases.
- **H** The *x*-intercept decreases.
- **J** The *y*-intercept decreases.
- **37** You roll a number cube twice. What is the probability of rolling a number greater than 1 both times?
 - $\mathbf{A} \frac{2}{3}$
 - **B** $\frac{1}{2}$
 - -
 - $\mathbf{C} \quad \frac{1}{4}$
 - **D** $\frac{25}{36}$

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38 Triangle *ABC* is graphed on the coordinate plane shown below.



Which set of coordinates represents the vertices of a triangle congruent to triangle *ABC*?

- **F** (11, 4), (14, 4), (13, 10)
- **G** (1,2), (7,2), (6,8)
- **H** (10, 1), (16, 1), (13, 7)
- **J** (8, 5), (8, 10), (14, 8)
- **39** Which inequality best describes the domain of the graph shown below?



A $1 \le x \le 4$ **B** $y \le 3$ **C** $-3 \le y \le 5$ **D** $x \le 3$



Name	

 40 Sean does petsitting in the summer. His net profit, <i>p</i>, is represented by the equation p = 12a - 130, where <i>a</i> is the number of pets he watches. Which is the best interpretation of this information? F Sean made a profit of \$142. G Sean earns \$12 dollars for each pet he watches and initially invested \$120. 	 43 Don has a spinner with 11 equal sections, each of which is colored either black, white, or gray. If the spinner lands on white 21 times out of 55 spins, what is the most likely number of white sections on the spinner? A 3 B 4
 H Sean earns \$130 per pet watched. J Sean paid \$12 to get his petsitting business started and has 130 clients. 	C 6 D 8
 41 If D is a point on BC in △ABC, which of the following statements must be true? A ∠ABD + ∠ADB = 180° B ∠ADC + ∠ADB = 180° C ∠ADC + ∠ADB = 90° D ∠ABD + ∠ACD = 180° 	44 Which expression is equivalent to $(3 + 2c)4c^2 + (2c)(2c^2 + 3)?$ F $6c^2 + 6c + 12$ G $12c^3 + 12c^2 + 6c$ H $12c^3 + 6c^2 + 12c$ J $12c^2 + 8c + 10$
 42 A sphere has a volume of 90 cm³. If the diameter of the sphere is halved, what is the new volume of the sphere? F 11.25 cm³ G 22.5 cm³ H 28.7 cm³ J 45.0 cm³ 	 45 Steve wants to solve the equation x² + x - 3 = 0 by graphing. Which method can he use to find the solutions? A Graph the equation y = x² + x - 3 and find the <i>y</i>-intercepts. B Graph the equation y = x² + x - 3 and find the <i>x</i>-intercepts. C Graph the equation y = x² + x and find the <i>y</i>-intercepts. D Graph the equation y = x² + x and find the <i>x</i>-intercepts.



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46 In the figure below, \overline{DE} is parallel to \overline{GH} . **49** The midpoint of \overline{ST} has coordinates (6, -4). If S has coordinates (8, -2), which ordered pair represents the coordinates of T? 4 ft **A** (1,1) 12 ft 9 ft **B** (4, −6) **C** (7, −3) **D** (10,0) What is the length of \overline{FG} ? F 9 ft G 6 ft **H** 4.5 ft 50 What is the approximate lateral surface area of the cone shown below? **J** 3 ft 11 in. **47** In $\triangle FGH$, which of the following equations relates h to g? 3 in. **F** 28.3 in.² **G** 107.4 in.² **H** 131.9 in.² **J** 310.8 in.² 60° $H^{\underline{h}}$ **A** h = 180 - g**B** h = 120 - g**51** Jim bought 7 tomatoes for a total of \$1.80. **C** h = 60 - gThe total cost, c, of purchasing t tomatoes **D** h = 240 - gcan be found by which of the following? **A** dividing \$1.80 by 7 then multiplying by *t* **B** dividing \$1.80 by *t* then multiplying by 7 **C** multiplying \$1.80 by *t* then multiplying 48 What are the *x*-intercepts of the graph of the equation $y = x^2 - 4x + 3?$ by 7 **D** multiplying 1.80 by *t* **F** x = -3, x = 1**G** x = 3, x = 1**H** x = -3, x = -1**J** x = 3, x = -1

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52 What is the equation of the line that passes through the point (14, -10) and is parallel to the line $y = \frac{1}{2}x - 12?$

- **F** y = -2x + 18
- **G** y = -2x + 38
- **H** $y = \frac{1}{2}x + 3$

J
$$y = \frac{1}{2}x - 17$$

- 53 Solve the equation 4e 5 + 2e = e + 3 2efor e.
 - **A** 7
 - **B** $-\frac{7}{8}$ $C \frac{8}{7}$
 - **D** 5
- 54 Which equation best represents the line on the graph?



- **F** 2y + 5x = 4
- **G** y 5x = 1**H** 2y - 10x = 2

$$\mathbf{J} \quad y + 5x = 2$$

- 55 What is the effect on the graph of $y = 2x^2 + 3$ when the equation is changed to $y = 2x^2 + 6$?
 - A The slope of the graph doubles.
 - **B** The graph is translated down 3 units.
 - **C** The graph widens.
 - **D** The graph is translated up 3 units.
- 56 Garrett purchased x pounds of beef at \$4 each and y bags of chips at \$3 each. He spent less than \$30, not including tax. Use the grid below to graph the inequality 4x + 3y < 30.



Which point represents a reasonable number of pounds of beef and bags of chips that Garrett purchased?

- **F** (2,8)
- **G** (7,1)
- **H** (5,3)
- **J** (6,4)



- **57** David claimed that if you add 1 to any number, then double it, it will be greater than the original number. Which of the following examples disproves David's claim?
 - **A** Compare 2(1 + 1) to 1.
 - **B** Compare 2(0 + 1) to 0.
 - **C** Compare 2(-1 + 1) to -1.
 - **D** Compare 2(-2 + 1) to -2.

- **60** A room has an area of 128 square feet. If the length is twice the width, what is the width of the room?
 - **F** 8 feet
 - **G** 10 feet
 - **H** 12 feet
 - **J** 14 feet

58 In the figure below, \overline{AC} is twice as long as \overline{DE} and they are parallel. Which of the following statements must be true?



- **F** \overline{BC} is twice as long as \overline{DE} .
- **G** \overline{AD} is twice as long as \overline{CE} .
- **H** \overline{BC} is twice as long as \overline{BE} .
- **J** \overline{BC} is twice as long as \overline{AB} .
- **59** Bob sold 14 magazine subscriptions, for a total of \$740. The cost of a one-year subscription is \$40 and the cost of a twoyear subscription is \$70. How many two-year subscriptions did he sell?

A 5

- **B** 6
- **C** 7
- **D** 8

