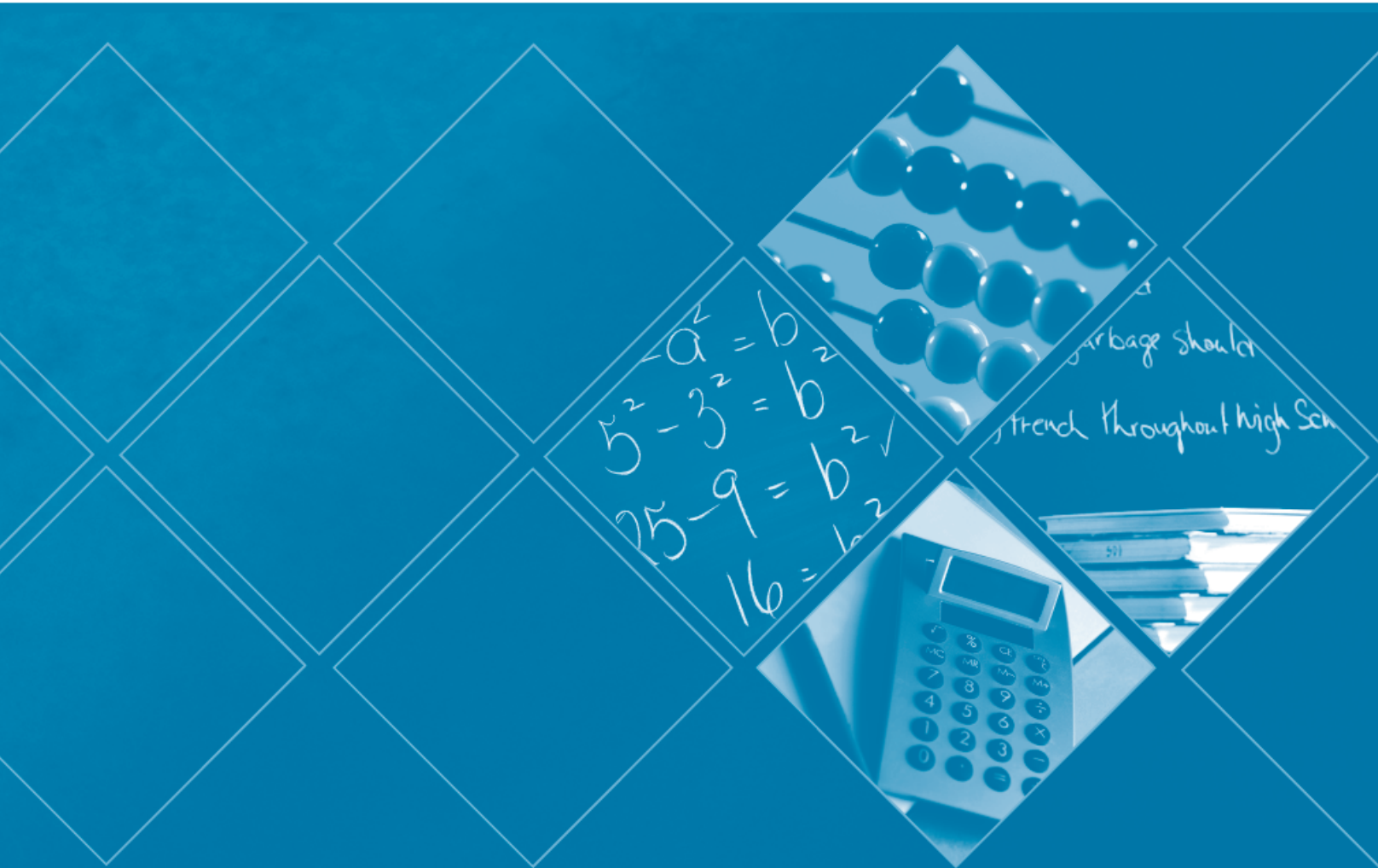


Student Name: \_\_\_\_\_

# American Diploma Project

**ALGEBRA I**  
End-of-Course Exam

**PRACTICE TEST**



# General Directions

Today you will be taking an ADP Algebra I End-of-Course Practice Test. To complete this test, you will need to use the answer document provided with this practice test. This practice test is designed to simulate the ADP Algebra I testing experience. Your test will not be scored at Pearson. However, an answer key is provided to check answers.

This test consists of two sessions. During Session 1, you will NOT be allowed to use a calculator. During Session 2, you will be allowed to use an approved calculator.

Three different types of questions appear on this test: multiple-choice, short-answer, and extended-response. The response area for short-answer questions is about one-half page, and the response area for extended-response questions is about one page.

While taking this test, remember:

1. Read each question carefully, including diagrams and graphs.
2. For multiple-choice questions, choose the best answer from the four choices given. Mark only one response for each multiple-choice question.
3. For short-answer and extended-response questions, write your answers in the gridded box provided in your answer document. You do not have to use all of the space provided. Although a gridded answer space is provided, you will not need to graph answers to all extended-response or short-answer questions. Answers may be graphs, text, or calculations.
4. If a short-answer or extended-response question asks you to show your work, you must do so to receive full credit. If you are using a calculator, describe the calculation process you used in enough detail to be duplicated, including the numbers you entered and the function keys you pressed to find the answer. If a short-answer or extended-response item has multiple parts, label each section of work and clearly identify your answer for each part.
5. Be sure to answer all questions before you end each test session. However, do not spend too much time on any one question. If you do not know the answer to a question, make your best guess and go on to the next question. You will not be penalized for guessing.

# Session 1

## Session 1 Directions

You may NOT use a calculator in this session. When you have finished this session, you may check over your work in this session only.

1. Which of the following represents a linear function?

A.  $f(x) = 3^x$

B.  $f(x) = x^3$

C.  $f(x) = 3x^2$

D.  $f(x) = x + 3$

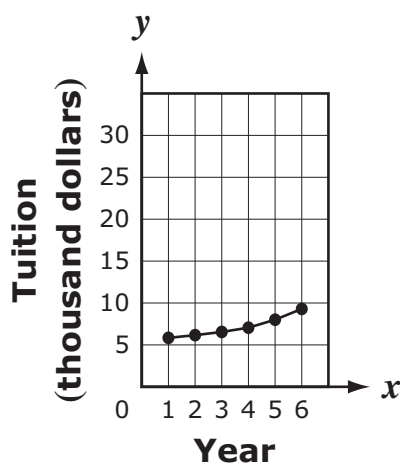
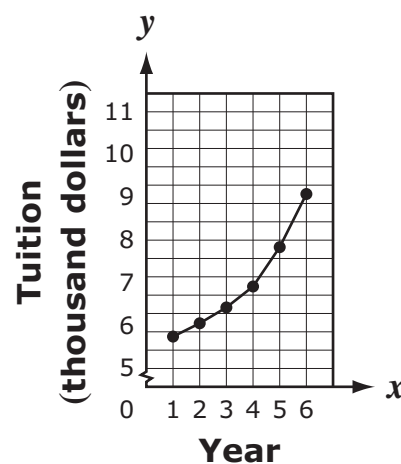
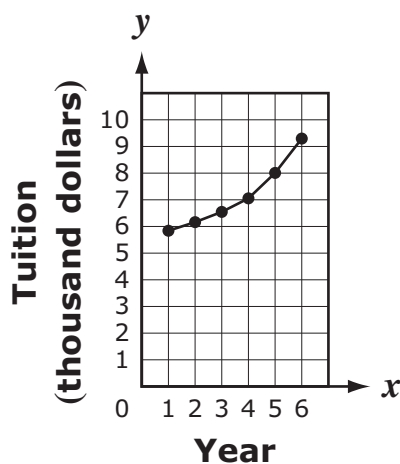
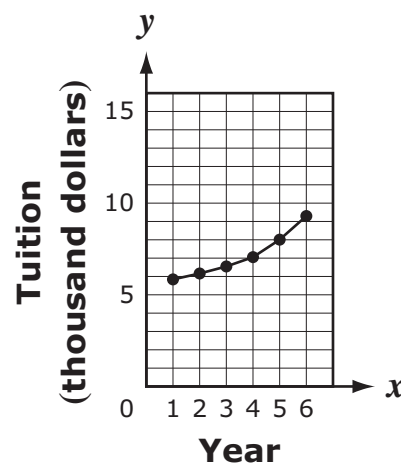


2. The tuition rates for in-state residents to attend a state college are shown in the table below.

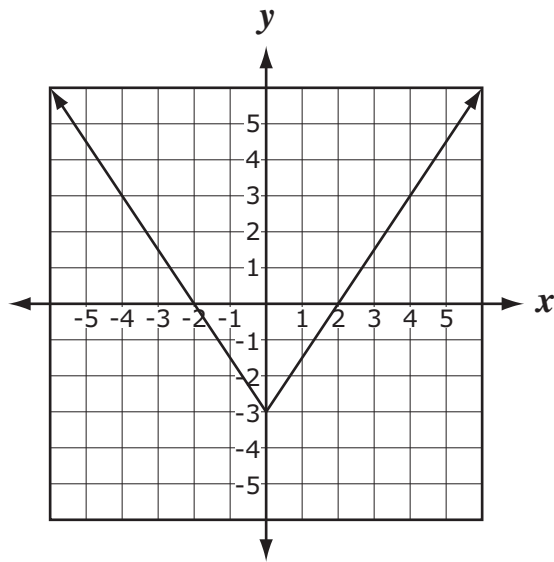
**State College Tuition**

| Year    | 1       | 2       | 3       | 4       | 5       | 6       |
|---------|---------|---------|---------|---------|---------|---------|
| Tuition | \$5,840 | \$6,162 | \$6,546 | \$7,054 | \$8,008 | \$9,296 |

Which of the following data displays would best accompany an article entitled "State College: Six Years of Consistently Low and Affordable Tuition"?

**A.****B.****C.****D.**

3. Consider the graph below.



Which function best represents this graph?

- A.**  $f(x) = \frac{3}{2}|x - 3|$
- B.**  $f(x) = \left|\frac{3}{2}x - 3\right|$
- C.**  $f(x) = \left|\frac{3}{2}x\right| - 3$
- D.**  $f(x) = \left|\frac{3}{2}x - 3\right|$

4. Express  $\frac{\sqrt{2} + \sqrt{6}}{\sqrt{3}}$  with a rational denominator.
- A.  $\frac{\sqrt{2} + \sqrt{6}}{3}$
- B.  $\frac{\sqrt{6} + 3\sqrt{2}}{3}$
- C.  $\sqrt{6} + \sqrt{2}$
- D.  $2\sqrt{2}$
5. Which of the following describes the graph of the function  $f(x) = (-x + 3)(x - 5)$ ?
- A. opens up and  $x$ -intercepts at  $(-5, 0)$  and  $(3, 0)$
- B. opens up and  $x$ -intercepts at  $(3, 0)$  and  $(5, 0)$
- C. opens down and  $x$ -intercepts at  $(-5, 0)$  and  $(-3, 0)$
- D. opens down and  $x$ -intercepts at  $(3, 0)$  and  $(5, 0)$



6. Consider the table below.

| $x$ | $y$ |
|-----|-----|
| 0   | 3   |
| 1   | 6   |
| 2   | $r$ |

What value of  $r$  will make the table a representation of an exponential function? Explain your answer.

7. Consider the system of equations below.

$$\begin{aligned}x + y &= 6 \\ y &= -x + 2\end{aligned}$$

Which statement correctly describes the graphs of these equations?

- A. The lines are parallel.
- B. The lines coincide.
- C. The lines intersect at  $(2, 4)$ .
- D. The lines intersect at  $(-2, 8)$ .



8. Solve  $4x^2 - 10x + 6 = 0$ .

A.  $x = -\frac{1}{2}$  or  $x = 3$

B.  $x = -1$  or  $x = \frac{3}{2}$

C.  $x = \frac{3}{4}$  or  $x = 2$

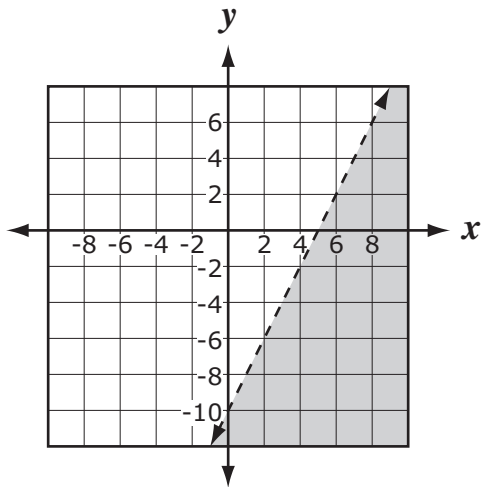
D.  $x = \frac{3}{2}$  or  $x = 1$



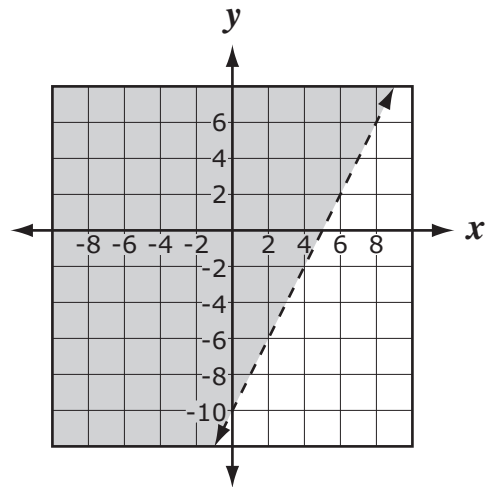


9. Which graph best represents  $2x - y < 10$ ?

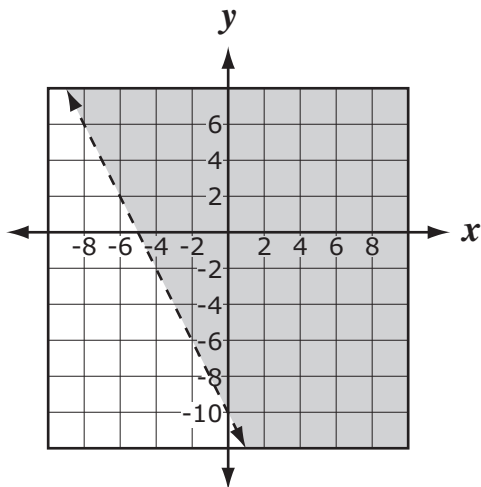
A.



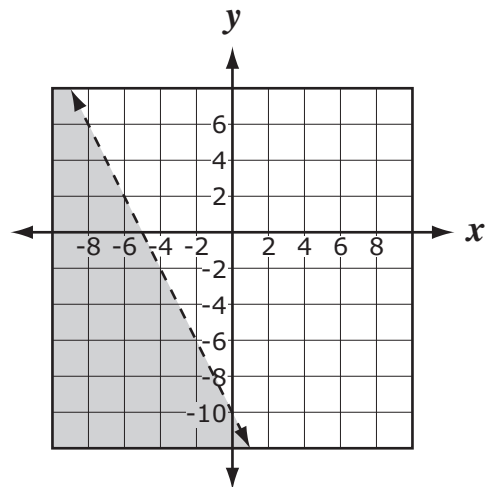
B.



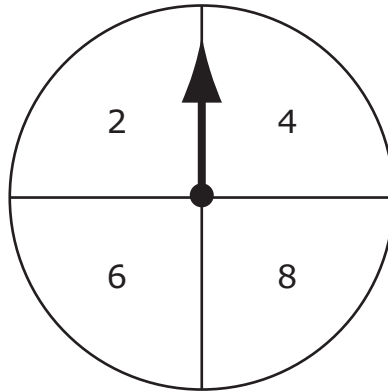
C.



D.



- 10.** Pat spins the spinner below and rolls a cube with sides numbered 1 through 6 one time each.



What is the probability that the spinner and number cube both land on 2?

- A.**  $\frac{1}{24}$
- B.**  $\frac{1}{6}$
- C.**  $\frac{2}{3}$
- D.**  $\frac{22}{24}$

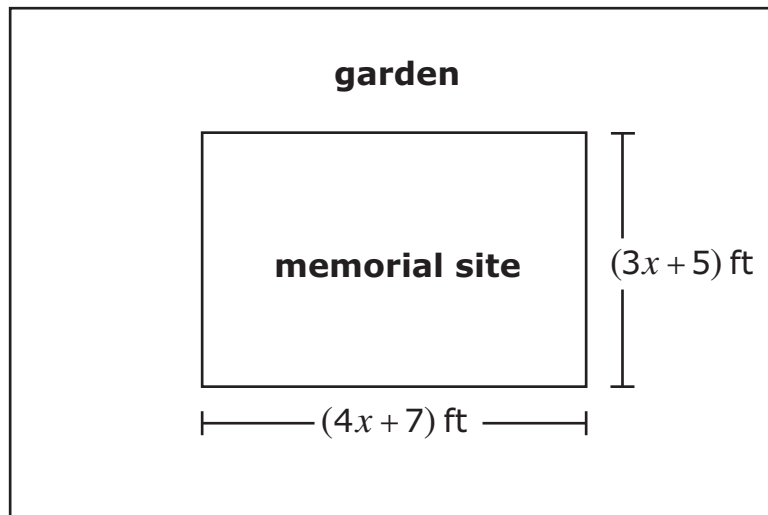


**11.** What is the vertex of the graph of  $f(x) = 2x^2 - 4x$ ?

- A.** (0,0)
- B.** (0,2)
- C.** (1,-2)
- D.** (1,6)



**12.** City officials are putting a garden around a memorial site as shown below.



- Part A** Determine the area of the memorial site in terms of  $x$ . Write your answer as a trinomial and include units. Show or explain your work.
- Part B** The outside edges of the garden form a rectangle whose length and width are proportional to the sides of the memorial site, increased by a scale factor of 3. Determine the lengths of the outside edges of the garden. Write your answer in simplest form.
- Part C** Determine the area of the garden in terms of  $x$ . Write your answer in simplest form. Show or explain your work.



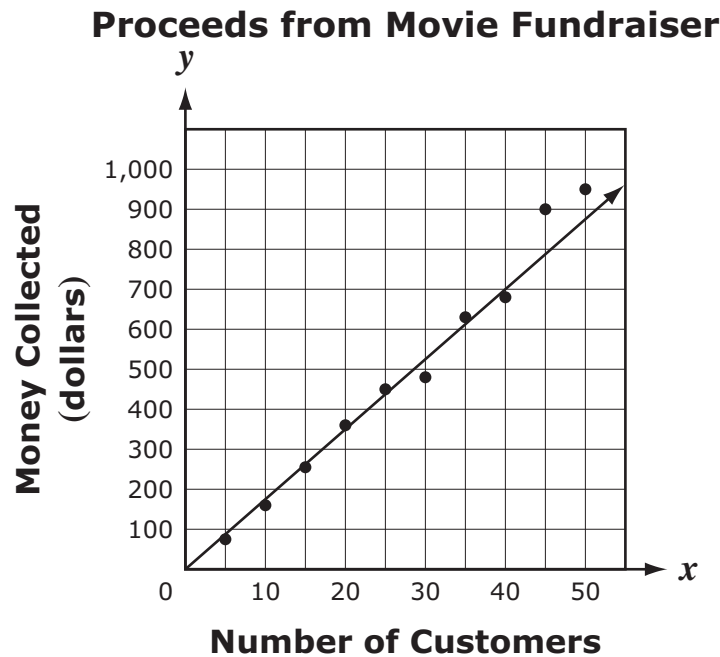
- 13.** The point on a pin has a diameter of approximately  $1 \times 10^{-4}$  meters. If an atom has a diameter of  $2 \times 10^{-10}$  meters, about how many atoms could fit across the diameter of the point of a pin?

**A.** 50,000  
**B.** 500,000  
**C.** 2,000,000  
**D.** 5,000,000

- 14.** Which equation represents a line that intersects  $y = -\frac{1}{2}x - 5$  at exactly one point?

**A.**  $y = -\frac{2}{3}x - 3$   
**B.**  $y = -\frac{1}{2}x - 2$   
**C.**  $y = -\frac{2}{4}x - 5$   
**D.**  $y = -\frac{1}{2}x + 5$

- 15.** A movie theater sells tickets and refreshments as a fundraiser. The data points below show the amount of money collected after every five customers completed all of their purchases.



What does the slope of the line of best fit represent?

- A.** the cost of one ticket
- B.** the exact amount of money spent by each customer
- C.** the average amount of money spent by each customer
- D.** the difference between the amounts spent by any group of two customers



- 16.** Chris and Kim worked together to paint skateboards. Kim painted 10 more than twice the number of skateboards that Chris painted. Together they painted 100 skateboards. Which of these equations can be used to find the number of skateboards ( $x$ ) that Chris painted?

- A.**  $2x + 10 = 90$
- B.**  $3x + 10 = 90$
- C.**  $2x + 10 = 100$
- D.**  $3x + 10 = 100$

- 17.** Solve  $6 - 3(4x - 5) = 7$ .

- A.**  $x = -\frac{4}{3}$
- B.**  $x = \frac{7}{6}$
- C.**  $x = \frac{11}{6}$
- D.**  $x = \frac{7}{3}$

- 18.** The total mass of a cart loaded with equally sized metal blocks made from the same metal can be represented by the linear function  $f(b) = 500b + 5,500$ , where  $f(b)$  is the total mass in grams and  $b$  is the number of metal blocks on the cart.

**Part A** What does the coefficient 500 represent in  $f(b)$ ? Include appropriate units in your answer.

**Part B** What does the  $y$ -intercept of  $f(b)$  represent?

- 19.** Which of the following numbers is irrational?

**A.**  $\sqrt{2^4}$

**B.**  $\sqrt{900}$

**C.**  $\sqrt{10(2.5)}$

**D.**  $\sqrt{10(80)}$



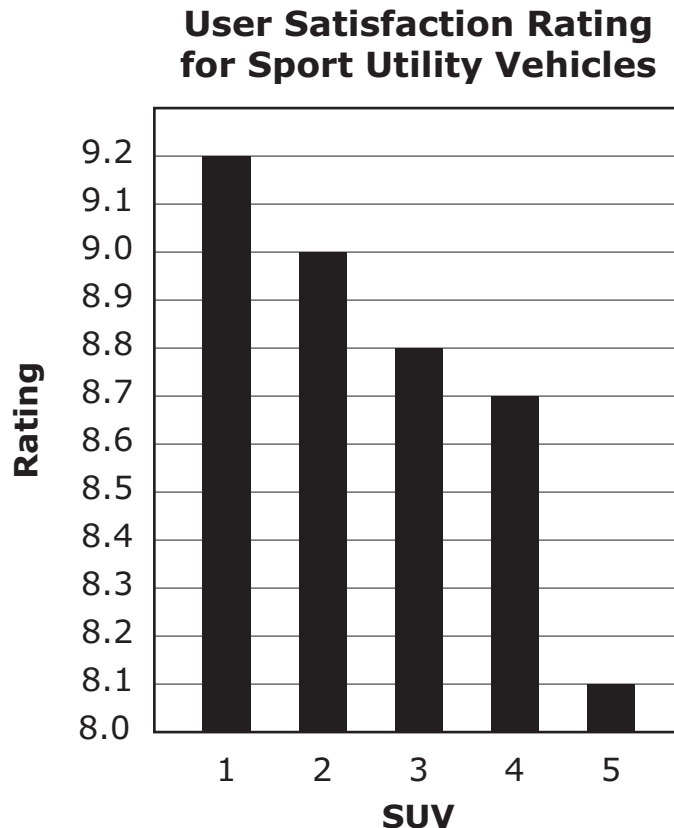


20. Simplify  $(2 - \sqrt{5})(4 + \sqrt{5})$ .

- A. 3
- B. 6
- C.  $3 - 2\sqrt{5}$
- D.  $13 - 2\sqrt{5}$



- 21.** Owners of 5 different Sport Utility Vehicles (SUVs) were asked to rate their satisfaction with their vehicle on a scale of 1 to 10. A score of 10 meant they were extremely satisfied with their SUV. The graph below shows the average User Satisfaction Ratings of the 5 SUVs.

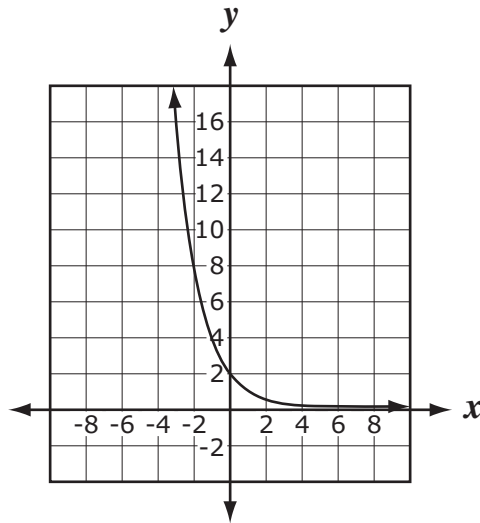


Which statement best describes who would be most interested in publishing the data as presented in the graph above?

- A.** The manufacturer of SUV-1, interested in selling more vehicles.
- B.** The manufacturer of SUV-5, interested in showing the comparison of the SUVs on the market.
- C.** A government vehicle safety commission, interested in promoting the equality of SUVs in production.
- D.** An independent rater interested in showing consumers that all of the SUVs represented in the graph have equally satisfied owners.



22. Consider the graph below.



Which function is best represented by this graph?

- A.  $f(x) = 2^x$
- B.  $f(x) = -2^x$
- C.  $f(x) = \left(\frac{1}{2}\right)^x$
- D.  $f(x) = 2\left(\frac{1}{2}\right)^x$



23. Solve  $|3x + 2| = -1$ .

A.  $x = -1$  only

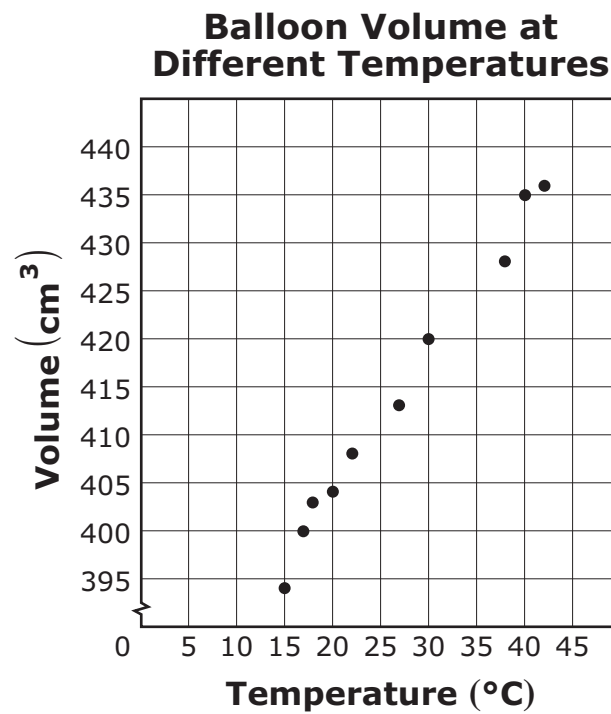
B.  $x = 1$  only

C.  $x = -1$  or  $x = -\frac{1}{3}$

D. no solution



24. The graph below shows the volume of a balloon at different temperatures.



Using the graph, predict the volume of the balloon in cubic centimeters at 35°C. Justify your answer.

**Intentionally left blank**

## Session 2

### Session 2 Directions

You MAY use a calculator in this session. When you have finished this session, you may check over your work in this session only. Do not return to the previous session.

**25.** Solve  $S = \pi rL + \pi r^2$  for  $L$ .

**A.**  $L = S - r$

**B.**  $L = r - S$

**C.**  $L = \frac{\pi r^2 - S}{\pi r}$

**D.**  $L = \frac{S - \pi r^2}{\pi r}$

**26.** A restaurant's menu features 5 appetizers, 7 entrées, and 3 desserts. A customer orders only one appetizer, only one entrée, and only one dessert. How many different meals can be ordered?

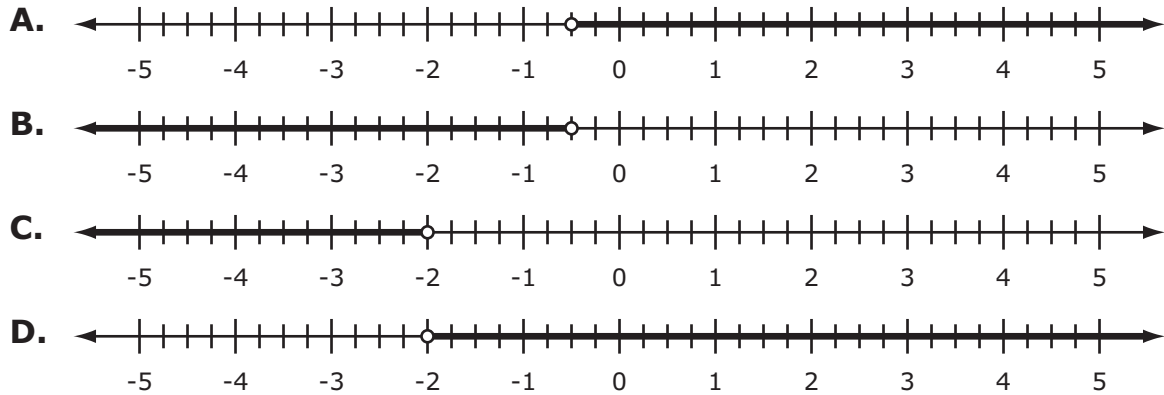
**A.** 3

**B.** 15

**C.** 35

**D.** 105

27. Which graph represents the solution set for  $\frac{1}{2} - \frac{2}{3}x < \frac{5}{6}$ ?



28. Factor  $2x^3 + 8x^2 - 24x$ .

- A.  $2x(x + 6)(x - 2)$
- B.  $2x(x - 6)(x + 2)$
- C.  $2x(x + 4)(x - 3)$
- D.  $2x(x - 4)(x + 3)$





29. Consider the table below.

**Car Rental**

| <b>Trip</b> | <b>Time</b> | <b>Distance Traveled</b> | <b>Cost</b> |
|-------------|-------------|--------------------------|-------------|
| First Trip  | 2 days      | 275 miles                | \$140.75    |
| Second Trip | 1 day       | 95 miles                 | \$59.75     |

A salesman rents a car for two trips from the same rental company. The rental company charges a daily fee plus a charge for each mile driven. According to this table, how much did the rental company charge per day and per mile?

- A. \$17 per day and \$0.45 per mile
- B. \$36 per day and \$0.25 per mile
- C. \$8.45 per day and \$0.54 per mile
- D. \$70.38 per day and \$0.63 per mile

30. Write  $x^2(x+2) - 3x(x+2) + 2(x+7)$  as a simplified polynomial. Show or explain your work.



**31.** The legs of a right triangle have lengths  $x + 2$  and  $x + 6$ . The hypotenuse has length  $2x$ . Find the perimeter of the triangle.

- A.** 26 units
- B.** 30 units
- C.** 38 units
- D.** 48 units

**32.** Simplify completely  $\sqrt{y^5 z^{10}}$ .

- A.**  $y^2 z^2 \sqrt{y^2 z^5}$
- B.**  $y^2 |z|^5 \sqrt{y}$
- C.**  $y^2 z^5 \sqrt{y}$
- D.**  $|z|^5 \sqrt{y^5}$



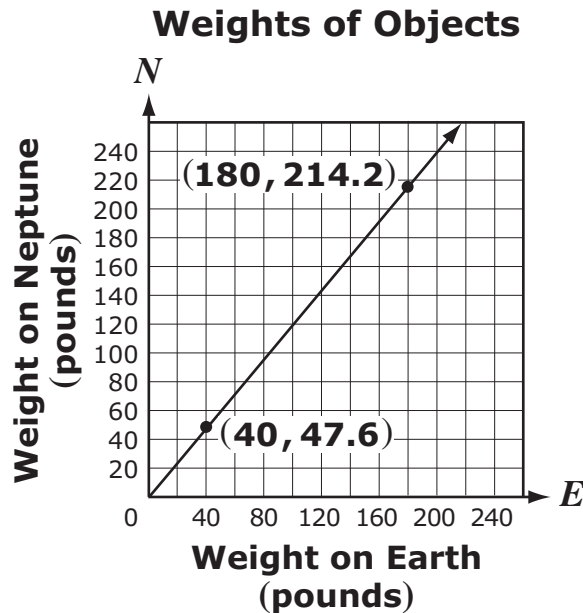
- 33.** In a sample of 50 randomly selected students at a school, 38 students eat breakfast every morning. There are 652 students in the school. Using these results, predict the number of students that eat breakfast.
- A.** 76
  - B.** 123
  - C.** 247
  - D.** 496
- 34.** A data set contains the numbers 691, 313, 324, 244, and 244. What will happen to the mean and median of this data set, if the number 486 is added to the list?
- A.** the mean and the median will both increase
  - B.** the mean and the median will both decrease
  - C.** the mean will increase and the median will decrease
  - D.** the mean will decrease and the median will increase



- 35.** An athletic club charges a monthly membership fee of \$52.00. Members may choose to take classes for an additional \$10 per class. Next month, the club will have a special that includes 3 free classes for new members. Which function can be used to calculate  $C(x)$ , the total cost for a new member who takes  $x$  classes next month where  $x \geq 3$ ?
- A.**  $C(x) = 3x + 52$
  - B.**  $C(x) = 10x + 52$
  - C.**  $C(x) = 3(x - 10) + 52$
  - D.**  $C(x) = 10(x - 3) + 52$



36. The graph below shows the relationship between the weights of objects on Earth and Neptune.



- Part A** Write an equation that represents the relationship between the weight ( $E$ ) of an object on Earth and the weight ( $N$ ) of the object on Neptune. Show or explain your work.
- Part B** What is the weight in pounds of an object on Earth if the weight of the object on Neptune is 280 pounds? Show or explain your work.
- Part C** If the weight of an object on Earth increases by 2 pounds, what is the equivalent weight increase in pounds on Neptune? Explain your reasoning.



**37.** The height ( $h$ ) in feet of a ball  $t$  seconds after being dropped is given by the function  $h(t) = 9 - 16t^2$ . From what height in feet was the ball initially dropped?

- A.** 0
- B.**  $\frac{3}{4}$
- C.**  $\frac{4}{3}$
- D.** 9



38. Simplify  $\frac{(x^{-2}y^{10})^2}{x^5y^{-3}}$  to an expression with only positive exponents.

A.  $\frac{y^{17}}{x}$

B.  $\frac{y^{15}}{x^5}$

C.  $\frac{y^{23}}{x^9}$

D.  $\frac{y^{26}}{x^7}$



**39.** Solve  $\frac{4x+y}{3y} = 2$  for  $y$ .

**A.**  $y = x$

**B.**  $y = \frac{4x}{7}$

**C.**  $y = \frac{4x}{5}$

**D.**  $y = \frac{3}{2x}$

**40.** Solve  $|5x - 4| = 19$ .

**A.**  $x = -\frac{23}{5}$  or  $x = \frac{23}{5}$

**B.**  $x = -3$  or  $x = \frac{23}{5}$

**C.**  $x = -\frac{1}{5}$  or  $x = \frac{39}{5}$

**D.**  $x = 3$  or  $x = \frac{23}{5}$





- 41.** A computer program for burning CDs allows the user to adjust the speed and file settings. There are 3 times as many speed settings as file settings. Let  $x$  represent the number of file settings. Which expression represents the number of different combinations of speed and file settings?
- A.**  $3x$
  - B.**  $3x^2$
  - C.**  $3x + x$
  - D.**  $(3 + 2 + 1)x$
- 42.** Given  $y = 7$ , solve  $(x + 3)^2 + (y - 4)^2 = 5^2$  for all values of  $x$ . Show or explain your work.

- 43.** Convert 42 miles per hour to feet per second (to the nearest tenth).
- A.** 63.0 feet per second
  - B.** 61.6 feet per second
  - C.** 58.3 feet per second
  - D.** 28.6 feet per second
- 44.** Which description best compares the graphs given by the equations  $-6x + 15y = 5$  and  $30x + 12y = 4$ ?
- A.** parallel
  - B.** coincident
  - C.** perpendicular
  - D.** intersecting but not perpendicular
- 45.** Consider the inequality  $6x + y < p$ . What must be true about the value of  $p$  in order for the origin to be part of the solution?
- A.**  $p \geq 0$
  - B.**  $p > 0$
  - C.**  $p \leq 0$
  - D.**  $p < 0$



**46.** Simplify  $(a^3 - 5a + b - 2) - (3a^3 + 5a - b + 2)$ .

- A.**  $-2a^3$
- B.**  $-2a^3 + 2b$
- C.**  $-2a^3 - 10a + 2b$
- D.**  $-2a^3 - 10a + 2b - 4$

**47.** Karen has taken 4 science quizzes. Her scores were 72, 80, 84, and 92. What minimum score must she get on her next quiz to have an average score of at least 84?

- A.** 82
- B.** 84
- C.** 92
- D.** 95





# American Diploma Project

**ALGEBRA I**  
End-of-Course Exam

**Practice Test**



12. Write your response to question 12 in the grid below.

A large rectangular grid consisting of 30 columns and 30 rows of small squares, intended for writing the response to question 12.

Mark your responses to questions 13 through 17 here.

- |     |   |   |   |   |
|-----|---|---|---|---|
| 13. | A | B | C | D |
| 14. | A | B | C | D |
| 15. | A | B | C | D |
| 16. | A | B | C | D |
| 17. | A | B | C | D |

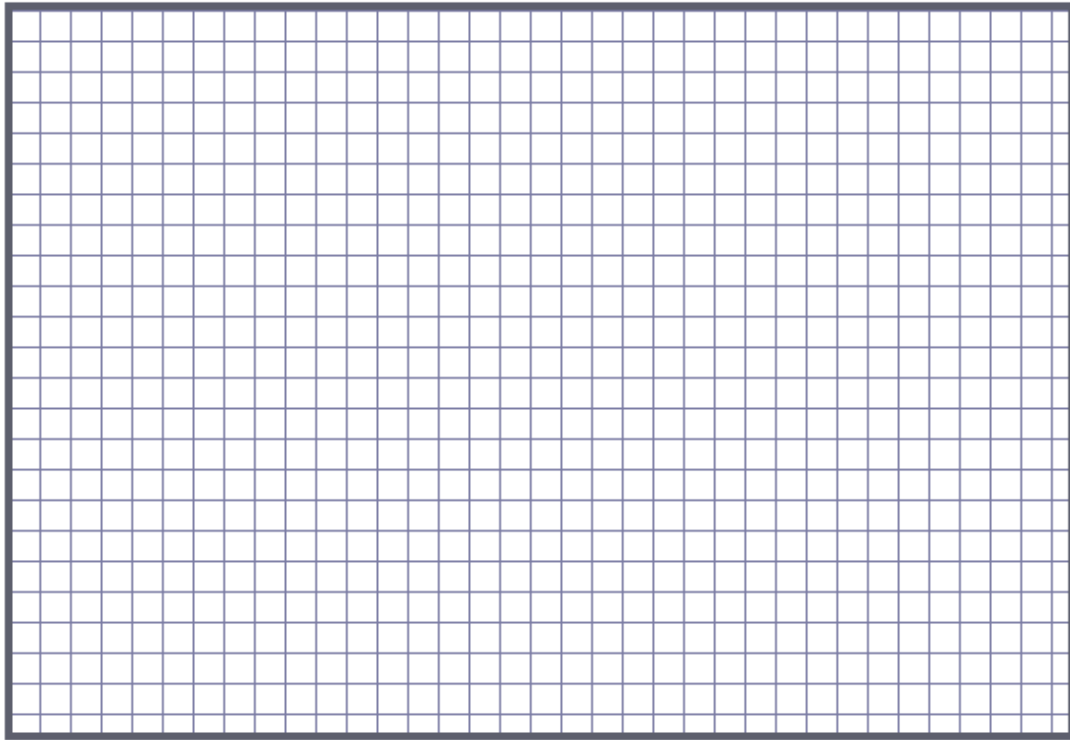
18. Write your response to question 18 in the grid below.

[illegible]

Mark your responses to questions 19 through 23 here.

- |     |   |   |   |   |
|-----|---|---|---|---|
| 19. | A | B | C | D |
| 20. | A | B | C | D |
| 21. | A | B | C | D |
| 22. | A | B | C | D |
| 23. | A | B | C | D |

24. Write your response to question 24 in the grid below.

A large grid for writing a response, consisting of 20 columns and 30 rows of small squares. The grid is enclosed in a thick black border.





Please review your answers before continuing the exam. You cannot return to Session 1 once you begin Session 2.

**Mark your responses to questions 25 through 29 here.**

|     |   |   |   |   |
|-----|---|---|---|---|
| 25. | A | B | C | D |
| 26. | A | B | C | D |
| 27. | A | B | C | D |
| 28. | A | B | C | D |
| 29. | A | B | C | D |

**30. Write your response to question 30 in the grid below.**

This image shows a full page of blank graph paper. The grid consists of small squares formed by thin green lines. A thicker green border runs along the top and left edges of the page, while the bottom and right edges are open. There are no markings or text on the grid itself.

**Mark your responses to questions 31 through 35 here.**

|     |   |   |   |   |
|-----|---|---|---|---|
| 31. | A | B | C | D |
| 32. | A | B | C | D |
| 33. | A | B | C | D |
| 34. | A | B | C | D |
| 35. | A | B | C | D |

36. Write your response to question 36 in the grid below.

A large rectangular grid of graph paper, consisting of 30 columns and 30 rows of small squares. The grid is enclosed by a thick dark green border. It is intended for a student to write their response to question 36.

**Mark your responses to questions 37 through 41 here.**

|     |   |   |   |   |
|-----|---|---|---|---|
| 37. | A | B | C | D |
| 38. | A | B | C | D |
| 39. | A | B | C | D |
| 40. | A | B | C | D |
| 41. | A | B | C | D |

**42. Write your response to question 42 in the grid below.**

This image shows a full page of blank graph paper. The grid consists of small squares formed by thin green lines. A thicker green border runs along the top and left edges of the page, while the bottom and right edges are open. The entire area is covered by the uniform grid pattern.

**Mark your responses to questions 43 through 47 here.**

|     |   |   |   |   |
|-----|---|---|---|---|
| 43. | A | B | C | D |
| 44. | A | B | C | D |
| 45. | A | B | C | D |
| 46. | A | B | C | D |
| 47. | A | B | C | D |

## Answer Key – ADP Algebra I Practice Test

1. D
2. A
3. C
4. B
5. D

### 6. Scoring Rubric

| Score        | Description                                                                 |
|--------------|-----------------------------------------------------------------------------|
| <b>2</b>     | Student earns 2 points.                                                     |
| <b>1</b>     | Student earns 1 point.                                                      |
| <b>0</b>     | Response is incorrect or irrelevant to the skill or concept being measured. |
| <b>Blank</b> | Student fails to respond.                                                   |

### Scoring Notes:

#### 2 points

- 1 point for a correct answer [12]
- 1 point for a correct explanation [example: The  $y$ -value changes by multiplying the previous  $y$ -value by 2.]

7. A
8. D
9. B
10. A
11. C

12. **Scoring Rubric**

| <b>Score</b> | <b>Description</b>                                                          |
|--------------|-----------------------------------------------------------------------------|
| <b>4</b>     | Student earns 5 points.                                                     |
| <b>3</b>     | Student earns 4 points.                                                     |
| <b>2</b>     | Student earns 2 or 3 points.                                                |
| <b>1</b>     | Student earns 1 point.                                                      |
| <b>0</b>     | Response is incorrect or irrelevant to the skill or concept being measured. |
| <b>Blank</b> | Student fails to respond.                                                   |

**Scoring Notes:**

**Part A: 2 points**

- 1 point for a correct strategy  
 $[(3x + 5)(4x + 7) = 12x^2 + 21x + 20x + 35 \text{ or equivalent}]$
- 1 point for a correct answer  
 $[12x^2 + 41x + 35 \text{ ft}^2 \text{ or equivalent}]$

**Part B: 1 point**

- 1 point for a correct answer  
 $[9x + 15 \text{ and } 12x + 21 \text{ or equivalent}]$

**Part C: 2 points**

- 1 point for a correct strategy of determining the area of the garden  
 $\left[ (108x^2 + 369x + 315) - (12x^2 + 41x + 35) \text{ or equivalent} \right]$   
or a correct strategy based on incorrect answer in Part A or Part B
- 1 point for a correct answer  
 $[96x^2 + 328x + 280 \text{ or equivalent}]$  or a correct answer based on incorrect answer in Part A or Part B

13. B

14. A

15. C

16. D

17. B

18. **Scoring Rubric**

| <b>Score</b> | <b>Description</b>                                                          |
|--------------|-----------------------------------------------------------------------------|
| <b>2</b>     | Student earns 3 points.                                                     |
| <b>1</b>     | Student earns 1 or 2 points.                                                |
| <b>0</b>     | Response is incorrect or irrelevant to the skill or concept being measured. |
| <b>Blank</b> | Student fails to respond.                                                   |

**Scoring Notes:**

**Part A: 2 points**

- 1 point for a correct statement of representation [The coefficient represents the mass of each metal block. or equivalent]
- 1 point for a correct statement of reasonable units [The units are grams/block.]

**Part B: 1 point**

- 1 point for a correct statement [The y-intercept represents the mass of the empty cart. or equivalent]

19. D  
20. C  
21. A  
22. D  
23. D

24. **Scoring Rubric**

| Score        | Description                                                                 |
|--------------|-----------------------------------------------------------------------------|
| <b>2</b>     | Student earns 2 points.                                                     |
| <b>1</b>     | Student earns 1 point.                                                      |
| <b>0</b>     | Response is incorrect or irrelevant to the skill or concept being measured. |
| <b>Blank</b> | Student fails to respond.                                                   |

**Scoring Notes:**

**2 points**

- 1 point for a correct answer [Any value between 422 and 428]
- 1 point for a correct justification [Example: 426 is about halfway between the values for 30 and 38 degrees.]

25. D

26. D

27. A

28. A

29. B

30. **Scoring Rubric**

| Score        | Description                                                                 |
|--------------|-----------------------------------------------------------------------------|
| <b>2</b>     | Student earns 2 points.                                                     |
| <b>1</b>     | Student earns 1 point.                                                      |
| <b>0</b>     | Response is incorrect or irrelevant to the skill or concept being measured. |
| <b>Blank</b> | Student fails to respond.                                                   |

**Scoring Notes:**

**2 points**

- 1 point for a correct strategy  

$$\left[ x^2(x+2) - 3x(x+2) + 2(x+7) = x^3 + 2x^2 - 3x^2 - 6x + 2x + 14 \right]$$
or equivalent
- 1 point for a correct answer  $\left[ x^3 - x^2 - 4x + 14 \right]$



31. D  
32. B  
33. D  
34. A  
35. D

36. **Scoring Rubric**

| Score | Description                                                                 |
|-------|-----------------------------------------------------------------------------|
| 4     | Student earns 6 points.                                                     |
| 3     | Student earns 4 or 5 points.                                                |
| 2     | Student earns 2 or 3 points.                                                |
| 1     | Student earns 1 point.                                                      |
| 0     | Response is incorrect or irrelevant to the skill or concept being measured. |
| Blank | Student fails to respond.                                                   |

**Scoring Notes:**

**Part A: 2 points**

- 1 point for a correct strategy  

$$\left[ m = \frac{214.2 - 47.6}{180 - 40} = \frac{166.6}{140} = 1.19; \text{ Since the graph intersects the } N\text{-axis at } 0, b = 0 \text{ or equivalent} \right]$$
- 1 point for a correct answer [ $N = 1.19E$  or equivalent]

**Part B: 2 points**

- 1 point for a correct strategy  

$$\left[ \begin{array}{l} 280 = 1.19E \\ 235.2941176... = E \\ \text{or equivalent} \end{array} \right]$$
- or a correct strategy based on an incorrect answer in Part A
- 1 point for a correct answer [235.3] or a correct answer based on an incorrect answer in Part A

**Part C: 2 points**

- 1 point for a correct answer [2.38] or a correct answer based on an incorrect answer in Part A
- 1 point for a correct explanation [I multiplied the slope by 2 since 1.19 pounds on Neptune is equivalent to 1 pound on Earth, or equivalent]

37. D  
38. C  
39. C  
40. B  
41. B

42. **Scoring Rubric**

| Score        | Description                                                                 |
|--------------|-----------------------------------------------------------------------------|
| <b>2</b>     | Student earns 2 points.                                                     |
| <b>1</b>     | Student earns 1 point.                                                      |
| <b>0</b>     | Response is incorrect or irrelevant to the skill or concept being measured. |
| <b>Blank</b> | Student fails to respond.                                                   |

**Scoring Notes:**

**2 points**

- 1 point for a correct strategy
 

$$(x + 3)^2 + (7 - 4)^2 = 5^2$$

$$(x + 3)^2 + 9 = 25$$

$$(x + 3)^2 = 16$$

$$x + 3 = 4 \text{ or } x + 3 = -4 \text{ or equivalent}$$
- 1 point for both correct answers [1 and - 7]

43. B  
44. C  
45. B  
46. D  
47. C