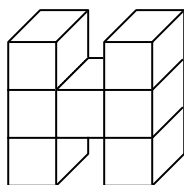


Provincial Achievement Testing 2011: Practice Booklet 2

Multiple Choice

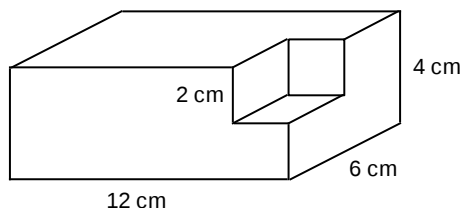
Identify the choice that best completes the statement or answers the question.

- ___ 1. This object is made from 7 centimetre cubes. Determine its surface area.



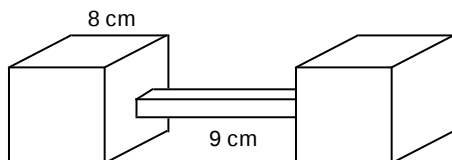
- a. 30 cm² b. 42 cm² c. 26 cm² d. 22 cm²

- ___ 2. This object is made of a right rectangular prism of length 12 cm, width 6 cm, and height 4 cm. A cube of side length 2 cm has been removed from one corner. Determine the surface area of the object.



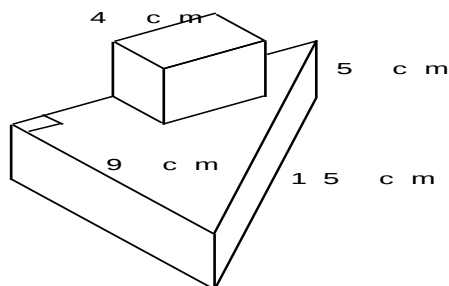
- a. 312 cm² b. 264 cm² c. 288 cm² d. 280 cm²

- ___ 3. This object is composed of two identical cubes joined by a right rectangular prism. The edge length of each cube is 8 cm. The rectangular prism is 9 cm long and has square ends of side length 3 cm. Determine the surface area of the object.



- a. 660 cm² b. 894 cm² c. 876 cm² d. 858 cm²

- ___ 4. A 4-cm cube is attached to the top of a right triangular prism as shown. Determine the surface area of the composite object, to the nearest square centimetre.



a. 298 cm^2

b. 352 cm^2

c. 336 cm^2

d. 368 cm^2

___ 5. Evaluate: 6^5

a. 30

b. 7776

c. 15 625

d. 11

___ 6. Evaluate: $\left[(-5)^0\right]^3$

a. $\frac{2}{3}$

b. $\frac{2}{3}$

c. 3

d. 1

___ 7. Identify equal rational numbers in this list:

$\frac{-3}{-4}, \frac{-3}{4}, \frac{-4}{-3}, \frac{3}{-4}, \frac{-3}{-4}$

a. $\frac{-4}{-3}$ and $\frac{3}{-4}$

c. $\frac{-3}{4}, \frac{-4}{-3}$, and $\frac{-3}{-4}$

b. $\frac{-3}{4}, \frac{3}{-4}$, and $\frac{-3}{-4}$

d. $\frac{-3}{-4}$ and $\frac{-4}{-3}$

___ 8. Determine this difference.

$\frac{-3}{-4} - \frac{7}{8}$

a. $\frac{13}{8}$

b. $\frac{1}{8}$

c. $\frac{1}{-8}$

d. $\frac{13}{8}$

___ 9. Determine this difference.

$-4\frac{2}{3} - 2\frac{1}{2}$

a. $-7\frac{1}{6}$

b. $7\frac{1}{6}$

c. $2\frac{1}{6}$

d. $-2\frac{1}{6}$

___ 10. Determine this quotient.

$(-2.45) \div (-4.9)$

a. 5

b. 0.05

c. 0.5

d. -0.5

___ 11. Evaluate.

$\frac{5}{6} - \frac{2}{3} \times \frac{3}{4} + \frac{5}{6}$

a. -4

b. $\frac{1}{72}$

c. $\frac{7}{6}$

d. $\frac{5}{7}$

___ 12. Which expression has the greatest value?

i) $9.1 - 2.7 \times (-1.8)^2$

ii) $9.1 - [2.7 \times (-1.8)^2]$

iii) $(9.1 - 2.7) \times (-1.8)^2$

iv) $9.1 \times (-2.7) \times (-1.8)^2$

a. i

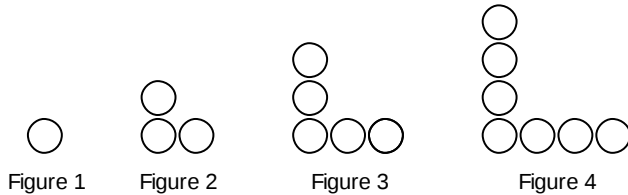
b. ii

c. iii

d. iv

- ___ 13. The cost to print stickers is \$6.55, plus \$0.55 per sticker.
Determine an equation that relates the total cost, C dollars, to the number of stickers, s .
- a. $C = 0.55s$ b. $C = 6.55 + s$ c. $C = 6.55 + 0.55s$ d. $C = 7.1s$

- ___ 14. Determine an equation that relates the number of circles, C , to the figure number, n .



- a. $C = 2n - 1$ b. $C = n \times n - 1$ c. $C = 2n + 1$ d. $C = n + 1$

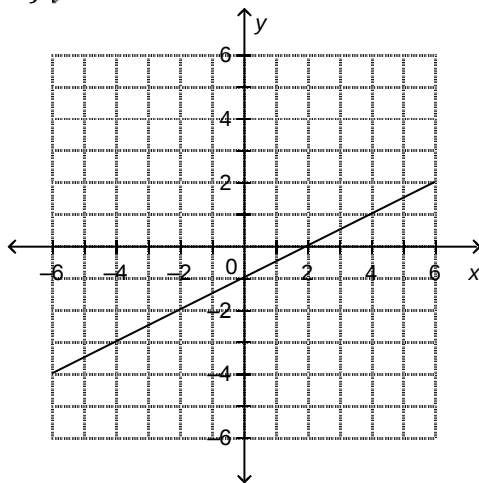
- ___ 15. Which equation describes the graph below?

i) $y = \frac{1}{2}x + 1$

ii) $y = \frac{1}{2}x - 1$

iii) $y = -2x - 1$

iv) $y = 2x - 1$



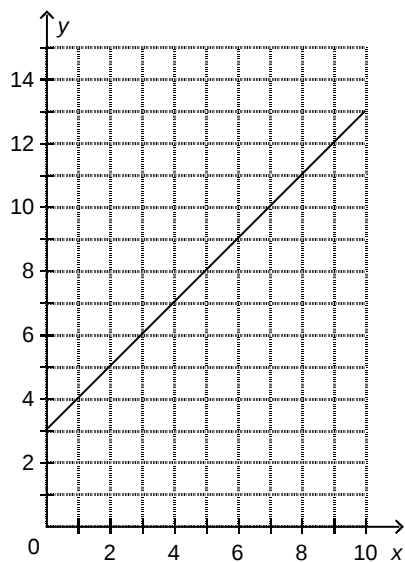
a. iii

b. i

c. ii

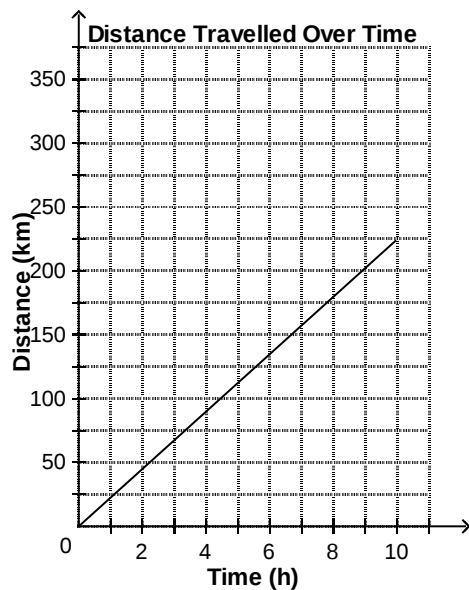
d. iv

- ___ 16. This graph represents a linear relation.
Determine the value of x when $y = 5$.



- a. 8 b. 3 c. 2 d. 5

- ___ 17. A car travels at a constant speed.
The graph shows how the distance of the car changes with time.
Estimate the time it takes to travel 270 km.



- a. 1 h b. 12 h c. 13 h d. 11 h

- ___ 18. How many terms are in the polynomial $10x^2 + 5x - 11$?
a. 10 b. 1 c. 11 d. 3

- ___ 19. Which of the following expressions are monomials with degree 2?
i) $2x^2 + 2x$
ii) $2x^2$
iii) x^2
iv) $2x$
a. ii and iii b. ii and iv c. iii and iv d. i and ii

___ 20. Simplify: $10x^2 - 8 + 3x + 5 - 6x^2 - 6x$

a. $4x^2 - 3x + 3$

b. $4x^2 - 3x - 3$

c. $4x^2 + 3x + 3$

d. $4x^4 - 3x^2 - 3$

___ 21. Add: $(8x - 6) + (-4x - 2)$

a. $4x - 8$

b. $4x - 4$

c. $12x - 8$

d. $4x + 4$

___ 22. Subtract: $(3 - 2c - 6c^2) - (5c - 3)$

a. $-6c^2 - 7c$

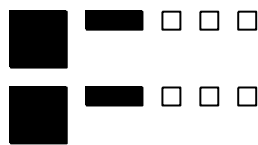
b. $6c^2 + 7c - 6$

c. $-6c^2 + 7c - 6$

d. $-6c^2 - 7c + 6$

___ 23. A large black square represents a $-x^2$ tile, a black rectangle represents an $-x$ -tile, and a small white square represents a 1-tile.

What is the division sentence modelled by this set of algebra tiles?



a. $\frac{-32x^2 - 32x + 16}{2}$

b. $\frac{-2x^2 - 2x + 6}{2}$

c. $\frac{-32x^2 + 32x + 48}{16}$

d. $\frac{2x^2 - 2x + 6}{2}$

___ 24. Multiply: $(-2)(4c^2 - 6c - 7)$

a. $-8c^2 - 12c - 14$

b. $2c^2 - 8c - 9$

c. $-8c^2 + 12c + 14$

d. $-8c^2 - 6c - 7$

___ 25. Multiply: $(-3w)(5w)$

a. $-8w^2$

b. $-15w^2$

c. $2w^2$

d. $15w^2$

___ 26. Multiply: $(-q)(6p - 7q)$

a. $-6pq + 7q^2$

b. $-6pq - 7q$

c. $6p + 8q$

d. $5pq - 8q^2$

___ 27. Solve: $4v - 6 = -14$

a. $v = -\frac{1}{2}$

b. $v = 2$

c. $v = -2$

d. $v = -2$

___ 28. Which of these numbers is a solution of $y > -5$?

i) 5

ii) $\frac{1}{2}$

iii) $\frac{1}{5}$

iv) 26

a. i and iv

b. iii and iv

c. ii and iii

d. i and ii

29. Which of these inequalities has 4 as a solution?

i) $p + 1 \leq -2$

ii) $q + 2 > -2$

iii) $r - 1 < -4$

iv) $s - 4 \geq -4$

a. ii and iv

b. i and ii

c. i and iii

d. i and iv

30. A wheel has diameter 60 cm.

Determine the diameter on a scale diagram if the scale factor is 0.07.

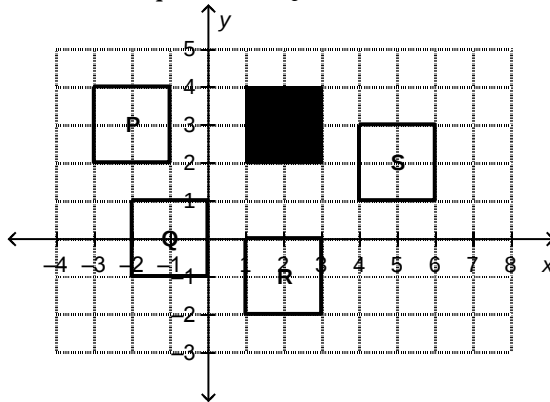
a. 86 cm

b. 42 cm

c. 4.2 cm

d. 67 cm

31. Which of squares P, Q, R, and S are related to the shaded square by line symmetry?



a. Squares P, R, and S

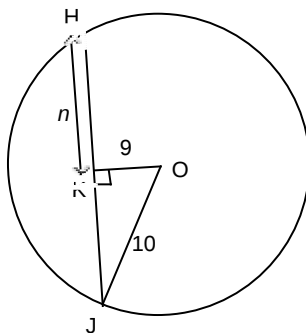
b. Squares P, Q, R, and S

c. Squares P and R

d. Squares P, Q, and R

32. O is the centre of the circle.

Determine the value of n to the nearest tenth, if necessary.



a. 13.5

b. 4.4

c. 19

d. 1

33. Jon's coworkers pool their money so they can buy more lottery tickets and increase their chance of winning.

Is their decision based on theoretical probability, experimental probability, or subjective judgment?

a. A combination of theoretical and experimental probability

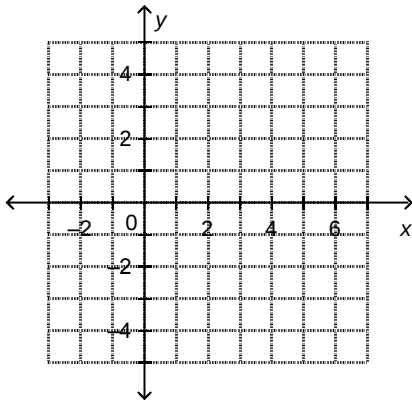
- b. Theoretical probability
- c. Experimental probability
- d. Subjective judgment

- ___ 34. According to the weather forecast, there is a 90% chance of snow, with accumulations of up to 10 cm. Andrew drives out to see his friends because he thinks the weather will not be as bad as it is forecasted to be.
Is his decision based on theoretical probability, experimental probability, or subjective judgment?
- a. Subjective judgment
 - b. A combination of experimental probability and subjective judgment
 - c. Theoretical probability
 - d. Experimental probability
- ___ 35. Adam boards the last car of the train because he's noticed in the past that the last car always has available seats.
Is his decision based on theoretical probability, experimental probability, or subjective judgment?
- a. Subjective judgment
 - b. Experimental probability
 - c. Theoretical probability
 - d. A combination of theoretical probability and subjective judgment
- ___ 36. In an anonymous survey, students were asked:
"Do you agree that everyone should become a vegetarian?"
In this survey, which of the following might be a problem?
- i) Cultural sensitivity
 - ii) Ethics
 - iii) Privacy
 - iv) Use of Language
- a. iv b. i c. ii d. iii
- ___ 37. Belinda gave a questionnaire with 100 questions to some students in grades 8, 9, and 10 to obtain information on their study habits. In this survey, which of the following might be a problem?
- i) Ethics
 - ii) Use of Language
 - iii) Cultural sensitivity
 - iv) Time
- a. i b. iii c. ii d. iv
- ___ 38. In late November Anita surveyed every student in her class to find out their favourite Christmas carols. Which of the following might be a problem?
- i) Timing
 - ii) Use of Language
 - iii) Cultural sensitivity
 - iv) Cost
- a. i b. iii c. iv d. ii

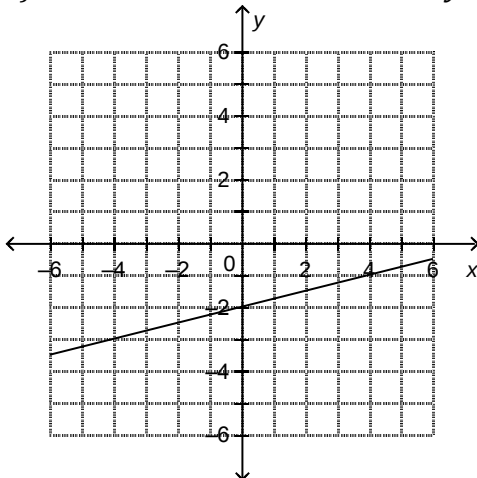
- ___ 39. A baker wants to check the quality of the muffins he bakes each day.
Which of the following data collection methods would provide the most accurate information?
- i) Test one muffin from each batch
 - ii) Test all the muffins in the first batch
 - iii) Test all the muffins in a random batch
 - iv) Test all the muffins in the last batch
- a. i b. iv c. ii d. iii
- ___ 40. A specialty craft store wants to know if customers are satisfied with the product selection.
To find out, they interview every 20th person leaving the store for 1 week.
Which sampling method does the store use?
- a. Simple random sampling
 - b. Systematic sampling
 - c. Cluster sampling
 - d. Self-selected sampling

Short Answer

41. Graph the following lines on the same grid. Label the lines.
- i) $y = 2$
 - ii) $x = 4$

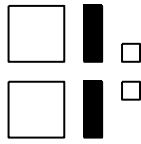


42. This graph represents a linear relation.
- a) Estimate the value of y when $x = -3$.
 - b) Estimate the value of x when $y = -1.5$.



43. A large white square represents an x^2 -tile, a black rectangle represents a $2x$ -tile, and a small white square represents a 1-tile.

What polynomial does this collection of algebra tiles represent?



44. A large white square represents an x^2 -tile, a large black square represents a $2x^2$ -tile, a white rectangle represents an x -tile, a black rectangle represents a $2x$ -tile, a small white square represents a 1-tile, and a small black square represents a 2 1-tile.

Match each polynomial with its corresponding algebra tile model.

- i) $3 - 2t + 4t^2$
 ii) $3a^2 - 6$
 iii) $4s - 7 - 2s^2$
 iv) $5m^2$
 v) $-3p + 8$
 vi) $-4c^2 + 6c - 2$

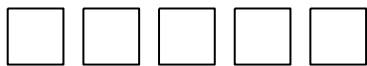
Model A



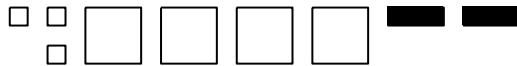
Model B



Model C



Model D



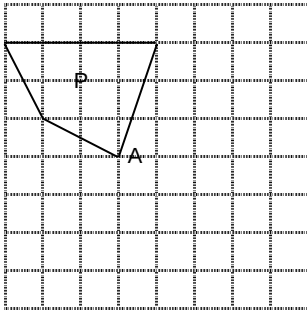
Model E



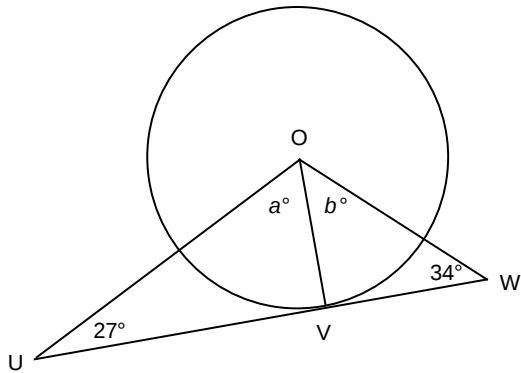
Model F



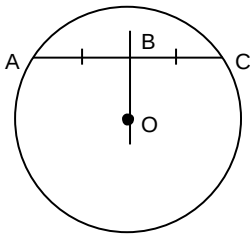
45. Draw the rotation image after a 90° clockwise rotation about vertex A.



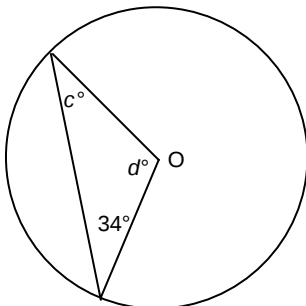
46. O is the centre of this circle and point V is a point of tangency. Determine the values of a° and b° .



47. O is the centre of the circle. What can you say about the measure of $\angle OBC$?



48. Point O is the centre of this circle. Determine the values of c° and d° .



49. Name a problem related to this data collection.

Brandon wanted to collect information on students' television viewing habits. He decided to mail a questionnaire, along with a self-addressed stamped envelope, to 300 students in his school.

50. A provincial government considers banning the use of cell phones in cars. It surveyed drivers using a freeway out of the capital city to determine motorists' opinions. Did the province survey a sample or a population?

Provincial Achievement Testing 2011 Booklet 2 Answer Key

MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: Easy
REF: 1.3 Surface Areas of Objects Made from Right Rectangular Prisms
LOC: 9.SS2 TOP: Shape and Space (3-D Objects and 2-D Shapes)
KEY: Procedural Knowledge
2. ANS: C PTS: 1 DIF: Moderate
REF: 1.3 Surface Areas of Objects Made from Right Rectangular Prisms
LOC: 9.SS2 TOP: Shape and Space (3-D Objects and 2-D Shapes)
KEY: Procedural Knowledge
3. ANS: D PTS: 1 DIF: Easy
REF: 1.4 Surface Areas of Other Composite Objects LOC: 9.SS2
TOP: Shape and Space (3-D Objects and 2-D Shapes) KEY: Procedural Knowledge
4. ANS: B PTS: 1 DIF: Easy
REF: 1.4 Surface Areas of Other Composite Objects LOC: 9.SS2
TOP: Shape and Space (3-D Objects and 2-D Shapes) KEY: Procedural Knowledge
5. ANS: B PTS: 1 DIF: Moderate REF: 2.1 What Is a Power?
LOC: 9.N1 TOP: Number KEY: Procedural Knowledge
6. ANS: D PTS: 1 DIF: Moderate REF: 2.5 Exponent Laws II
LOC: 9.N2 TOP: Number KEY: Procedural Knowledge
7. ANS: B PTS: 1 DIF: Easy REF: 3.1 What Is a Rational Number?
LOC: 9.N3 TOP: Number KEY: Conceptual Understanding
8. ANS: A PTS: 1 DIF: Moderate REF: 3.3 Subtracting Rational
Numbers
LOC: 9.N3 TOP: Number KEY: Procedural Knowledge
9. ANS: A PTS: 1 DIF: Moderate REF: 3.3 Subtracting Rational
Numbers
LOC: 9.N3 TOP: Number KEY: Procedural Knowledge
10. ANS: C PTS: 1 DIF: Moderate REF: 3.5 Dividing Rational Numbers
LOC: 9.N3 TOP: Number KEY: Procedural Knowledge
11. ANS: C PTS: 1 DIF: Moderate
REF: 3.6 Order of Operations with Rational Numbers LOC: 9.N4
TOP: Number KEY: Procedural Knowledge
12. ANS: C PTS: 1 DIF: Moderate
REF: 3.6 Order of Operations with Rational Numbers LOC: 9.N4

TOP: Number KEY: Procedural Knowledge

13. ANS: C PTS: 1 DIF: Easy
REF: 4.1 Writing Equations to Describe Patterns LOC: 9.PR1
TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
14. ANS: A PTS: 1 DIF: Easy
REF: 4.1 Writing Equations to Describe Patterns LOC: 9.PR1
TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
15. ANS: C PTS: 1 DIF: Moderate REF: 4.4 Matching Equations and Graphs
LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
16. ANS: C PTS: 1 DIF: Easy
REF: 4.5 Using Graphs to Estimate Values LOC: 9.PR2
TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
17. ANS: B PTS: 1 DIF: Moderate
REF: 4.5 Using Graphs to Estimate Values LOC: 9.PR2
TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
18. ANS: D PTS: 1 DIF: Easy REF: 5.1 Modelling Polynomials
LOC: 9.PR5 TOP: Patterns and Relations (Variables and Equations)
KEY: Conceptual Understanding
19. ANS: A PTS: 1 DIF: Easy REF: 5.1 Modelling Polynomials
LOC: 9.PR5 TOP: Patterns and Relations (Variables and Equations)
KEY: Conceptual Understanding
20. ANS: B PTS: 1 DIF: Moderate REF: 5.2 Like Terms and Unlike Terms
LOC: 9.PR5 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
21. ANS: A PTS: 1 DIF: Easy REF: 5.3 Adding Polynomials
LOC: 9.PR6 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
22. ANS: D PTS: 1 DIF: Moderate REF: 5.4 Subtracting Polynomials
LOC: 9.PR6 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
23. ANS: B PTS: 1 DIF: Easy
REF: 5.5 Multiplying and Dividing a Polynomial by a Constant
LOC: 9.PR7 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
24. ANS: C PTS: 1 DIF: Moderate
REF: 5.5 Multiplying and Dividing a Polynomial by a Constant

- LOC: 9.PR7 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
25. ANS: B PTS: 1 DIF: Easy
REF: 5.6 Multiplying and Dividing a Polynomial by a Monomial
LOC: 9.PR7 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
26. ANS: A PTS: 1 DIF: Moderate
REF: 5.6 Multiplying and Dividing a Polynomial by a Monomial
LOC: 9.PR7 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
27. ANS: C PTS: 1 DIF: Easy
REF: 6.2 Solving Equations by Using Balance Strategies LOC: 9.PR3
TOP: Patterns and Relations (Variables and Equations) KEY: Procedural Knowledge
28. ANS: D PTS: 1 DIF: Easy
REF: 6.3 Introduction to Linear Inequalities LOC: 9.PR4
TOP: Patterns and Relations (Variables and Equations) KEY: Conceptual Understanding
29. ANS: C PTS: 1 DIF: Easy
REF: 6.4 Solving Linear Inequalities by Using Addition and Subtraction
LOC: 9.PR4 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
30. ANS: C PTS: 1 DIF: Easy REF: 7.2 Scale Diagrams and Reductions
LOC: 9.SS4 TOP: Shape and Space (Transformations)
KEY: Procedural Knowledge
31. ANS: D PTS: 1 DIF: Easy
REF: 7.7 Identifying Types of Symmetry on the Cartesian Plane
LOC: 9.SS5 TOP: Shape and Space (Transformations)
KEY: Procedural Knowledge
32. ANS: B PTS: 1 DIF: Easy REF: 8.2 Properties of Chords in a Circle
LOC: 9.SS1 TOP: Shape and Space (Measurement) KEY: Conceptual Understanding
33. ANS: B PTS: 1 DIF: Easy REF: 9.1 Probability in Society
LOC: 9.SP4 TOP: Statistics and Probability (Chance and Uncertainty)
KEY: Conceptual Understanding
34. ANS: A PTS: 1 DIF: Moderate REF: 9.1 Probability in Society
LOC: 9.SP4 TOP: Statistics and Probability (Chance and Uncertainty)
KEY: Conceptual Understanding
35. ANS: B PTS: 1 DIF: Moderate REF: 9.1 Probability in Society

LOC: 9.SP4 TOP: Statistics and Probability (Chance and Uncertainty)

KEY: Conceptual Understanding

36. ANS: A PTS: 1 DIF: Easy

REF: 9.2 Potential Problems with Collecting Data

TOP: Statistics and Probability (Data Analysis)

LOC: 9.SP1

KEY: Conceptual Understanding

37. ANS: D PTS: 1 DIF: Easy

REF: 9.2 Potential Problems with Collecting Data

TOP: Statistics and Probability (Data Analysis)

LOC: 9.SP1

KEY: Conceptual Understanding

38. ANS: B PTS: 1 DIF: Easy

REF: 9.2 Potential Problems with Collecting Data

TOP: Statistics and Probability (Data Analysis)

LOC: 9.SP1

KEY: Conceptual Understanding

39. ANS: A PTS: 1 DIF: Easy

REF: 9.3 Using Samples and Populations to Collect Data

TOP: Statistics and Probability (Data Analysis)

LOC: 9.SP2

KEY: Conceptual Understanding

40. ANS: B PTS: 1 DIF: Easy

REF: 9.4 Selecting a Sample

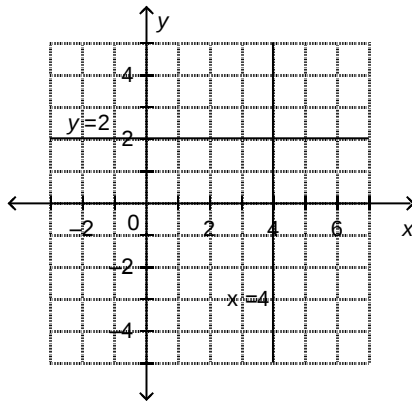
LOC: 9.SP2

TOP: Statistics and Probability (Data Analysis)

KEY: Conceptual Understanding

SHORT ANSWER

41. ANS:



PTS: 1

DIF: Easy

REF: 4.3 Another Form of the Equation for a Linear Relation

LOC: 9.PR1

TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge

42. ANS:

a) $y = -2.75$

b) $x = 2$

PTS: 1

DIF: Moderate

REF: 4.5 Using Graphs to Estimate Values

LOC: 9.PR2

TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge

43. ANS:

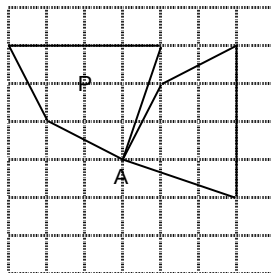
$$2x^2 - 2x + 2$$

PTS: 1 DIF: Easy REF: 5.1 Modelling Polynomials
 LOC: 9.PR5 TOP: Patterns and Relations (Variables and Equations)
 KEY: Conceptual Understanding

44. ANS:
 Model A: v
 Model B: vi
 Model C: iv
 Model D: i
 Model E: ii
 Model F: iii

PTS: 1 DIF: Moderate REF: 5.1 Modelling Polynomials
 LOC: 9.PR5 TOP: Patterns and Relations (Variables and Equations)
 KEY: Procedural Knowledge

45. ANS:



PTS: 1 DIF: Easy REF: 7.6 Rotations and Rotational Symmetry
 LOC: 9.SS5 TOP: Shape and Space (Transformations)
 KEY: Procedural Knowledge

46. ANS:
 $a^\circ = 63^\circ$, $b^\circ = 56^\circ$

PTS: 1 DIF: Moderate REF: 8.1 Properties of Tangents to a Circle
 LOC: 9.SS1 TOP: Shape and Space (Measurement) KEY: Conceptual Understanding

47. ANS:
 $\angle OBC = 90^\circ$

PTS: 1 DIF: Easy REF: 8.2 Properties of Chords in a Circle
 LOC: 9.SS1 TOP: Shape and Space (Measurement) KEY: Conceptual Understanding

48. ANS:
 $c^\circ = 34^\circ$, $d^\circ = 112^\circ$

PTS: 1 DIF: Easy REF: 8.2 Properties of Chords in a Circle
LOC: 9.SS1 TOP: Shape and Space (Measurement) KEY: Conceptual Understanding

49. ANS:

Answers will vary. For example:

Cost - The cost of printing and mailing the questionnaires could be high.

Timing - Some students may feel the survey will take too long to complete and return it.

PTS: 1 DIF: Easy REF: 9.2 Potential Problems with Collecting Data
LOC: 9.SP1 TOP: Statistics and Probability (Data Analysis)
KEY: Conceptual Understanding

50. ANS:

A sample

PTS: 1 DIF: Easy REF: 9.3 Using Samples and Populations to Collect Data
LOC: 9.SP2 TOP: Statistics and Probability (Data Analysis)
KEY: Conceptual Understanding