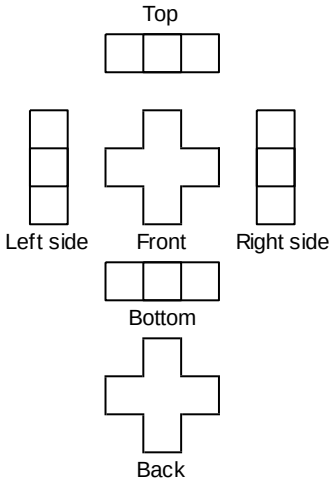
PAT Practice Entire Course #4

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

____ 1. Here are the 6 views of an object made using centimetre cubes. Determine its surface area.



a. 28 cm^2 b. 17 cm^2 c. 11 cm^2 d. 22 cm^2

____ 2. Write $(-4) \times (-4) \times (-4) \times (-4) \times (-4) \times (-4)$ as a power.
a. $(-4)^6$ b. $6 \times (-4)$ c. $-(4)^6$ d. $(-4)^5$

____ 3. Write $(5)(5)(5)(5)(5)(5)(5)(5)$ as a power.
a. 5^7 c. $(5)(5)(5)(5)(5)(5)(5)(5)$
b. 8×5 d. 5^8

____ 4. Which power is positive?
i) $(6)^5$
ii) $(-6)^5$
iii) $-(6)^5$
iv) $-(-6)^5$
a. i and iv b. iii and iv c. i, ii, and iv d. i and ii

____ 5. Which expression has a value closest to 2?
i) $(-2) \times (-3) - (-3)^2 - (3 \times 2)^0$
ii) $(-5 \times 3) + 4^2 - (-2)^0$
iii) $(-2)^0 - (-2)^1 - (-2)^2$
iv) $(-3)^2 + (-3) - (-2)^2 + (-2)^0$
a. iii b. iv c. i d. ii

____ 6. Yesterday, the temperature of a freezer was $-4.4°C$. When the technician checked the freezer today, its temperature had decreased by $9.8°C$. Determine the temperature of the freezer today.
a. $-5.4°C$ b. $5.4°C$ c. $14.2°C$ d. $-14.2°C$

____ 7. Determine this difference.

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

a. $-\frac{13}{8}$ b. $\frac{1}{8}$ c. $-\frac{1}{8}$ d. $\frac{13}{8}$

____ 8. Determine this difference.

$-\frac{5}{2}-\left(-\frac{9}{5}\right)$

a. $-\frac{43}{10}$ b. $-\frac{7}{10}$ c. $\frac{7}{10}$ d. $\frac{43}{10}$

____ 9. Which quotients are less than −1?

i) $\left(-\frac{1}{6}\right)\div\frac{1}{5}$

ii) $\left(-\frac{1}{5}\right)\div\frac{1}{6}$

iii) $\frac{1}{6}\div\left(-\frac{1}{5}\right)$

iv) $\frac{1}{5}\div\left(-\frac{1}{6}\right)$

a. iii and iv b. i and iii c. i and ii d. ii and iv

____ 10. 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*.

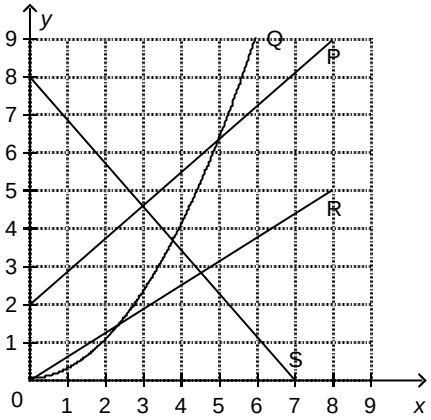
a. $C = 0.55s$ b. $C = 6.55 + s$ c. $C = 6.55 + 0.55s$ d. $C = 7.1s$

____ 11. The pattern in this table continues. Determine an equation that relates the term value to the term number.

Term Number, *s*	1	2	3	4	5
Term Value, *w*	6	10	14	18	22

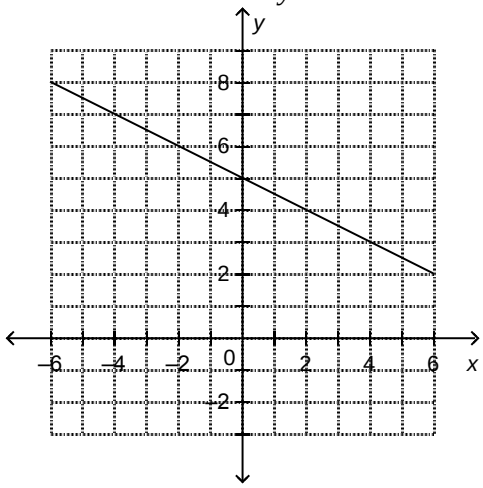
a. $w = 4s + 2$ b. $w = 6s$ c. $w = 3s + 2$ d. $w = 2s + 4$

____ 12. Which graphs represent a linear relation?



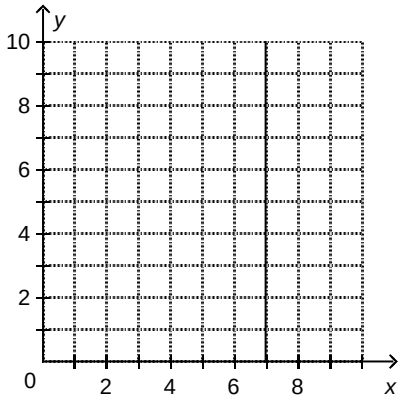
a. P only b. P, R, and S c. P and S d. P and R

____ 13. This graph represents a linear relation.
Determine the value of y when $x = 3$.



a. 5 b. 6.5 c. 3.5 d. 10

____ 14. This graph represents a linear relation.
Determine the value of x when $y = 5$.



a. 12 b. 5 c. 0 d. 7

____ 15. Which of the following expressions are monomials with degree 2?

i) $2x^2 + 2x$

ii) $2x^2$

iii) x^2

iv) $2x$

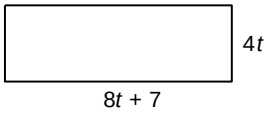
a. ii and iii b. ii and iv c. iii and iv d. i and ii

____ 16. Combine like terms. Sketch algebra tiles if it helps.

$9x^2 - 7x + 2x - 6x^2$

a. $-2x^2$ b. $3x^2 - 5x$ c. $2x^2 - 4x$ d. $3x^2 + 5x$

____ 17. Write the perimeter of this rectangle as a polynomial in simplest form.



a. $12t + 7$ b. $24t + 14$ c. $38t$ d. $24t + 7$

____ 18. Multiply: $6(3x^2 - 4x)$

a. $9x^2 - 2x$ b. $18x^2 - 24x$ c. $18x^2 - 4x$ d. $18x^2 + 2x$

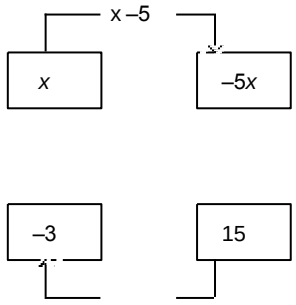
____ 19. Multiply: $(-3w)(5w)$

a. $-8w^2$ b. $-15w^2$ c. $2w^2$ d. $15w^2$

____ 20. Multiply: $-4c(2c - 3)$

a. $-2c^2 + 7$ b. $-8c^2 - 3$ c. $-8c^2 - 12c$ d. $-8c^2 + 12c$

____ 21. What is the missing value in this arrow diagram?



a. ÷5 b. ÷–5 c. ×5 d. ×–5

____ 22. Solve: $2.7 = \frac{8.1}{p}, p \neq 0$

a. $p =$ 0.3 b. $p = 30$ c. $p = \frac{1}{3}$ d. $p = 3$

____ 23. Solve: $1.2b + 2.6 = 10.1 - 1.3b$

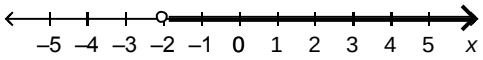
a. $b = 0.3$ b. $b = 3$ c. $b = -3$ d. $b = -0.3$

____ 24. Solve: $\frac{x}{4} + \frac{11}{2} = \frac{7}{4}$

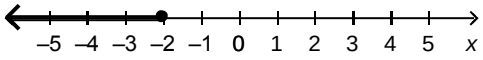
a. $x = -4$ b. $x = -60$ c. $x = -8$ d. $x = -15$

____ 25. Which of these graphs represent the solution of the inequality $5x \geq -10$?

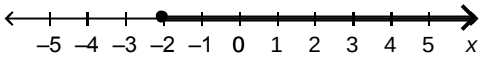
i)



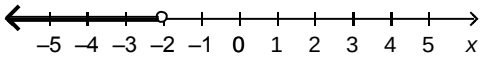
ii)



iii)



iv)

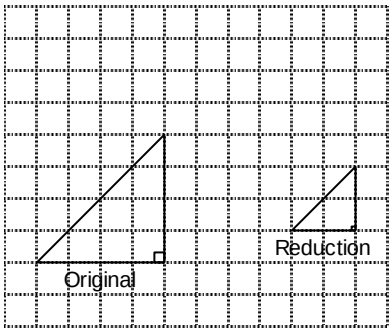


a. Graph iii b. Graph iv c. Graph ii d. Graph i

____ 26. Solve: $14 - 3t > 2$

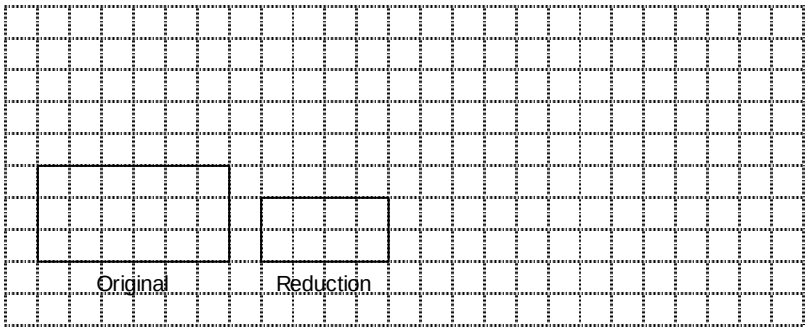
a. $t < -4$ b. $t < 4$ c. $t > 4$ d. $t > -4$

____ 27. Determine the scale factor for this reduction.



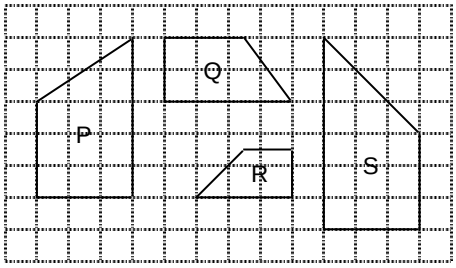
a. 2 b. $\frac{1}{4}$ c. $\frac{1}{2}$ d. 4

____ 28. Determine the scale factor for this reduction.



a. $\frac{3}{4}$ b. $\frac{3}{2}$ c. $\frac{1}{2}$ d. $\frac{2}{3}$

____ 29. Which two polygons have pairs of corresponding lengths that are proportional?

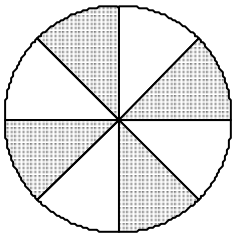


a. R and S b. P and S c. Q and R d. P and Q

____ 30. What is the angle of rotation symmetry for a shape that has rotational symmetry of order 5?

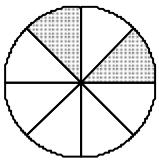
a. 144° b. 36° c. 72° d. 75°

____ 31. What is the order of rotational symmetry and angle of rotation symmetry for this design?



a. 4; 90° b. 6; 120° c. 8; 60° d. 8; 45°

____ 32. Which figure shows the rotation image of circle A after a 135° counterclockwise rotation about its centre?


Circle A

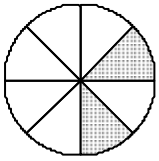


Figure i

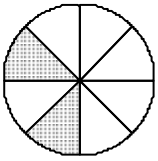


Figure ii

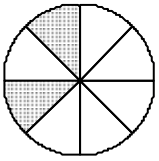


Figure iii

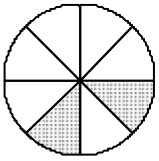
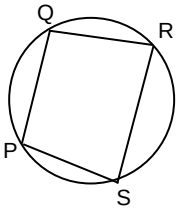


Figure iv

a. Figure iv b. Figure i c. Figure iii d. Figure ii

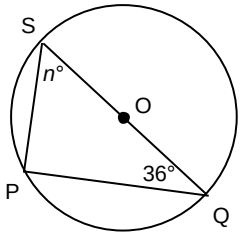
____ 33. Which of the following constructions would enable you to determine the centre of this circle?

i) Draw the perpendicular bisectors of PS and PQ.
ii) Join PR and QS.
iii) Join the mid-points of PS and QR and the mid-points of PQ and SR.



a. i and iii b. iii c. i d. ii

____ 34. O is the centre of this circle.
Determine the value of $n°$.



a. 108° c. 90°
b. 54° d. 36°

____ 35. 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

____ 36. Alec decided to survey all the library patrons in his city to see how often they downloaded e-books from the library's Web site.
Which of the following might be a problem with his survey?

i) Timing
ii) Bias

iii) Ethics
iv) Cost

a. iv b. iii c. i d. ii

____ 37. Marissa asked everyone in her class what chocolate bar they liked best.
Before her next test, she gave her teacher the chocolate bar he'd said he liked best.
What was a problem with Marissa's survey?
i) Use of Language
ii) Cost
iii) Ethics
iv) Timing

a. iii b. ii c. iv d. i

____ 38. A newspaper company wants to make sure that the pages of its newspaper appear in the correct order. Which population is it interested in testing?
i) All newspapers printed
ii) Newspapers delivered to residences
iii) Newspapers sold at newspaper stands
iv) Newspapers delivered to businesses

a. ii b. iv c. iii d. i

____ 39. A college wants to estimate the number of high school students who will enrol in September.
Which data collection method would provide the most accurate information?
i) Survey a sample of grade 12 students from one local high school
ii) Survey a sample of grade 12 students from all the local high schools
iii) Survey all grade 12 students from the local high schools
iv) Survey all grade 12 students from one local high school

a. iii b. i c. ii d. iv

____ 40. A mobile phone company wants to know if its customers would be willing to pay a higher monthly fee for a plan that would cover international calls to Europe. To gather data, they make a list of cell phone numbers that regularly make calls to Europe and use a computer program to randomly select numbers from this list to call and survey. Which sampling method did the company use?

a. Simple random sampling c. Self-selected sampling
b. Systematic sampling d. Convenience sampling

Problem

41. Determine the value of $\sqrt{6.47 + 7.36 + 17.53}$.

42. The Royal Canadian Mint produces valuable gold coins in 3 different diameters: 30 mm, 25 mm, and 20 mm
a) If 10^6 of the 30-mm coins were placed side by side in a single row, how far would they stretch?
b) If 10^6 of the 30-mm, 25-mm, and 20-mm coins were placed side by side in a single row, how far would they stretch?
Express your answers in kilometres.

43. Identify, then correct, any errors in the work shown.

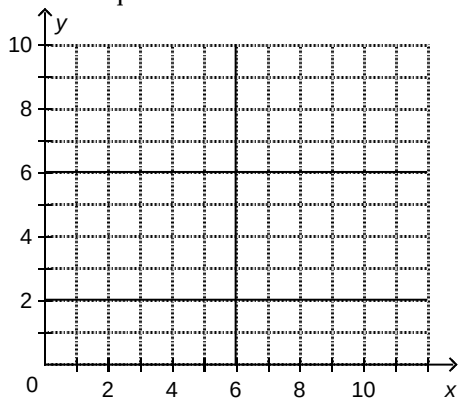
$$\frac{5^2 + 3 \times 4^2 - 3^2}{3^2 - (5 \times 4^0)}$$
$$= \frac{25 + 3 \times 16 - 9}{9 - 1}$$
$$= \frac{28 \times 7}{8}$$
$$= \frac{196}{8}$$
$$= 24.5$$

44. A pattern of rectangles have dimensions 2 cm by 1 cm, 3 cm by 2 cm, 4 cm by 3 cm, and 5 cm by 4 cm. The pattern continues.
    a) Complete this table of values for the perimeters and areas of the first 4 rectangles in the pattern.

Rectangle Number	1	2	3	4
Dimensions (cm)	2×1	3×2	4×3	5×4
Perimeter (cm)				
Area (cm^2)				

    b) Write equations for the perimeter, P cm, and area, A cm^2, for the nth rectangle in the pattern.
    c) Are the relations linear? Explain.
    d) Determine the perimeter and area of the 50th rectangle.

45. The graph below shows three lines.
    a) Write an equation to describe each line.
    b) Write an equation of a line that could be added to form a rectangle.
    c) Write two equations of lines that could be added to form a square.



46. The box below contains terms from different polynomials.
    a) List all the terms with coefficient 3.
    b) List all the terms with degree 2.
    c) Which terms have coefficient 3 and degree 2?

$3t$ $3a^2$ $2c^2$

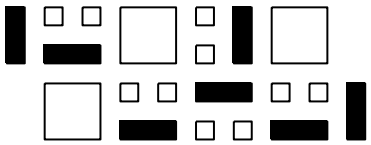
$3p$ $2q$ $-m$

$0.6g^2$ $-0.3x^2$

$3r^2$ $4w^2$

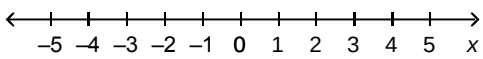
47. A large white square represents an x^2-tile, a large black square represents a $-x^2$-tile, a white rectangle represents an x-tile, a black rectangle represents a $-x$-tile, a small white square represents a 1-tile, and a small black square represents a −1-tile.

    Write the polynomial represented by this set of algebra tiles.

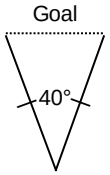


48. Identify the equivalent polynomials. Explain how you know.
    i) $3x^2 + 3x - 4 + 2x^2 - 6x - 3$
    ii) $x^2 + 12 + 2x - 5 - 5x + 4x^2$
    iii) $3x^2 - 6x + 2x^2 + 3 + 3x - 10$

49. Solve the inequality $2(x + 12) + 3(x - 4) \leq 4(x + 4)$, then graph its solution.
    Show your work.



50. Sheila is planning a shooting drill for a soccer team. She wants the soccer players to practice shooting on a net with a shooting angle of 20°. She has sketched this diagram.
    Complete Sheila's sketch to show the curve or line along which she should have the players stand so their shooting angle is 20°.



PAT Practice Entire Course #4
Answer Section

MULTIPLE CHOICE

1. ANS: D 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
2. ANS: A PTS: 1 DIF: Easy REF: 2.1 What Is a Power?
   LOC: 9.N1 TOP: Number KEY: Procedural Knowledge
3. ANS: D PTS: 1 DIF: Easy REF: 2.1 What Is a Power?
   LOC: 9.N1 TOP: Number KEY: Procedural Knowledge
4. ANS: A PTS: 1 DIF: Moderate REF: 2.1 What Is a Power?
   LOC: 9.N1 TOP: Number KEY: Conceptual Understanding
5. ANS: B PTS: 1 DIF: Difficult
   REF: 2.3 Order of Operations with Powers LOC: 9.N1
   TOP: Number KEY: Procedural Knowledge
6. ANS: D PTS: 1 DIF: Moderate REF: 3.2 Adding Rational Numbers
   LOC: 9.N3 TOP: Number KEY: Problem-Solving Skills
7. ANS: A PTS: 1 DIF: Moderate REF: 3.3 Subtracting Rational Numbers
   LOC: 9.N3 TOP: Number KEY: Procedural Knowledge
8. ANS: B PTS: 1 DIF: Moderate REF: 3.3 Subtracting Rational Numbers
   LOC: 9.N3 TOP: Number KEY: Procedural Knowledge
9. ANS: D PTS: 1 DIF: Difficult REF: 3.5 Dividing Rational Numbers
   LOC: 9.N3 TOP: Number KEY: Conceptual Understanding
10. 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
11. 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
12. ANS: B PTS: 1 DIF: Easy REF: 4.2 Linear Relations
    LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
13. 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
14. ANS: D PTS: 1 DIF: Moderate
    REF: 4.5 Using Graphs to Estimate Values LOC: 9.PR2
    TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
15. ANS: A PTS: 1 DIF: Easy REF: 5.1 Modelling Polynomials
    LOC: 9.PR5 TOP: Patterns and Relations (Variables and Equations)
    KEY: Conceptual Understanding
16. ANS: B PTS: 1 DIF: Easy REF: 5.2 Like Terms and Unlike Terms
    LOC: 9.PR5 TOP: Patterns and Relations (Variables and Equations)
    KEY: Procedural Knowledge
17. ANS: B PTS: 1 DIF: Moderate REF: 5.3 Adding Polynomials
    LOC: 9.PR6 TOP: Patterns and Relations (Variables and Equations)

KEY: Procedural Knowledge

18. ANS: B 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

19. 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

20. ANS: D 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

21. ANS: B PTS: 1 DIF: Easy
REF: 6.1 Solving Equations by Using Inverse Operations LOC: 9.PR3
TOP: Patterns and Relations (Variables and Equations) KEY: Procedural Knowledge

22. ANS: D 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

23. ANS: B PTS: 1 DIF: Moderate
REF: 6.2 Solving Equations by Using Balance Strategies LOC: 9.PR3
TOP: Patterns and Relations (Variables and Equations) KEY: Procedural Knowledge

24. ANS: D PTS: 1 DIF: Difficult
REF: 6.2 Solving Equations by Using Balance Strategies LOC: 9.PR3
TOP: Patterns and Relations (Variables and Equations) KEY: Procedural Knowledge

25. ANS: A PTS: 1 DIF: Easy
REF: 6.5 Solving Linear Inequalities by Using Multiplication and Division
LOC: 9.PR4 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge

26. ANS: B PTS: 1 DIF: Easy
REF: 6.5 Solving Linear Inequalities by Using Multiplication and Division
LOC: 9.PR4 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge

27. ANS: C PTS: 1 DIF: Easy REF: 7.2 Scale Diagrams and Reductions
LOC: 9.SS4 TOP: Shape and Space (Transformations)
KEY: Procedural Knowledge

28. ANS: D PTS: 1 DIF: Easy REF: 7.2 Scale Diagrams and Reductions
LOC: 9.SS4 TOP: Shape and Space (Transformations)
KEY: Procedural Knowledge

29. ANS: A PTS: 1 DIF: Moderate REF: 7.2 Scale Diagrams and Reductions
LOC: 9.SS4 TOP: Shape and Space (Transformations)
KEY: Procedural Knowledge

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

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

32. ANS: D PTS: 1 DIF: Moderate

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

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

34. ANS: B PTS: 1 DIF: Easy REF: 8.3 Properties of Angles in a Circle
LOC: 9.SS1 TOP: Shape and Space (Measurement) KEY: Conceptual Understanding

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

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

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

38. ANS: D 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

39. ANS: A 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

40. ANS: A PTS: 1 DIF: Easy REF: 9.4 Selecting a Sample
LOC: 9.SP2 TOP: Statistics and Probability (Data Analysis)
KEY: Conceptual Understanding

PROBLEM

41. ANS:

$$\sqrt{6.47 + 7.36 + 17.53} = \sqrt{31.36}$$
$$= 5.6$$

PTS: 1 DIF: Moderate REF: 1.1 Square Roots of Perfect Squares
LOC: 9.N5 TOP: Number KEY: Problem-Solving Skills

42. ANS:

a) 1 cm = 10 mm = 1×10^1 mm
1 m = 100 cm = 1000 mm = 1×10^3 mm
1 km = 1000 m = 100 000 cm = 1 000 000 mm = 1×10^6 mm
Since 1 km = 10^6 mm, 30×10^6 mm = 30 km
The 30-mm coins would stretch a distance of 30 km.

b) Since 1 km = 10^6 mm, $(30 \times 10^6) + (25 \times 10^6) + (20 \times 10^6) = 75 \times 10^6$ mm = 75 km
The coins would stretch a distance of 75 km.

PTS: 1 DIF: Difficult REF: 2.2 Powers of Ten and the Zero Exponent
LOC: 9.N1 TOP: Number KEY: Problem-Solving Skills | Communication

43. ANS:
Errors:
In the numerator, follow the order of operations. Do the multiplication before the addition and subtraction.

In the denominator, the exponent 0 does not apply to everything in the brackets.

Correction:

$$\frac{5^2 + 3 \times 4^2 - 3^2}{3^2 - (5 \times 4^0)}$$
$$= \frac{25 + 3 \times 16 - 9}{9 - 5 \times 1}$$
$$= \frac{25 + 48 - 9}{9 - 5}$$
$$= \frac{64}{4}$$
$$= 16$$

PTS: 1 DIF: Difficult REF: 2.3 Order of Operations with Powers
LOC: 9.N1 TOP: Number KEY: Problem-Solving Skills | Communication

44. ANS:

a)

Rectangle Number	1	2	3	4
Dimensions (cm)	2×1	3×2	4×3	5×4
Perimeter (cm)	6	10	14	18
Area (cm^2)	2	6	12	20

b) $P = 4n + 2$

$A = n(n + 1)$, or $A = n^2 + n$

c) The relation for the perimeter is linear. As n increases by 1, P increases by 4 each time.
The relation for the area is not linear. As n increases by 1, A changes by different amounts.

d) Substitute: $n = 50$

$P = 4(50) + 2$

$= 202$

The perimeter of the 50th rectangle is 202 cm.

$A = (50)^2 + (50)$

$= 2550$

The area of the 50th rectangle is 2550 cm^2.

PTS: 1 DIF: Difficult REF: 4.2 Linear Relations
LOC: 9.PR2 TOP: Patterns and Relations (Patterns)
KEY: Problem-Solving Skills | Communication

45. ANS:

a) $x = 6$
$y = 2$
$y = 6$

b) Any line with the equation $x = k$, where k is any number except 6, could be added to form a rectangle.

c) A line with the equation $x = 2$ or $x = 10$ could be added to form a square.

PTS: 1 DIF: Difficult REF: 4.3 Another Form of the Equation for a Linear Relation

LOC: 9.PR1 TOP: Patterns and Relations (Patterns) KEY: Problem-Solving Skills

46. ANS:

a) $3t$, $3a^2$, $3p^3$, and $3r^2$

b) $3a^2$, $2c^2$, $0.6g^2$, $-0.3x^2$, $3r^2$, $4w^2$

c) $3a^2$ and $3r^2$

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

47. ANS:

$3x^2 - 7x + 10$

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

48. ANS:

i) $3x^2 + 3x - 4 + 2x^2 - 6x - 3$

$= 3x^2 + 2x^2 + 3x - 6x - 4 - 3$

$= 5x^2 - 3x - 7$

ii) $x^2 + 12 + 2x - 5 - 5x + 4x^2$

$= x^2 + 4x^2 + 2x - 5x + 12 - 5$

$= 5x^2 - 3x + 7$

iii) $3x^2 - 6x + 2x^2 + 3 + 3x - 10$

$= 3x^2 + 2x^2 - 6x + 3x + 3 - 10$

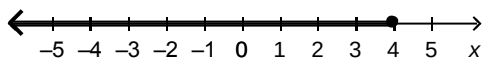
$= 5x^2 - 3x - 7$

Polynomials i and iii are equivalent because they are the same polynomial in simplified form.

PTS: 1 DIF: Difficult REF: 5.2 Like Terms and Unlike Terms
LOC: 9.PR5 TOP: Patterns and Relations (Variables and Equations)
KEY: Problem-Solving Skills | Communication

49. ANS:

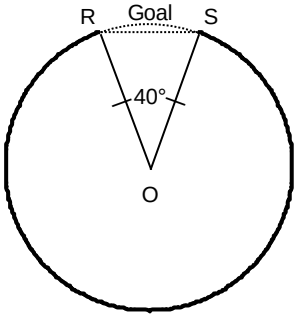
$$2(x + 12) + 3(x - 4) \le 4(x + 4)$$
$$2x + 24 + 3x - 12 \le 4x + 16$$
$$5x + 12 \le 4x + 16$$
$$5x + 12 - 4x \le 4x + 16 - 4x$$
$$x + 12 \le 16$$
$$x + 12 - 12 \le 16 - 12$$
$$x \le 4$$



PTS: 1 DIF: Difficult

REF: 6.4 Solving Linear Inequalities by Using Addition and Subtraction
LOC: 9.PR4 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge

50. ANS:
Label the endpoints of the goal, R and S, and the third point O.
Construct a circle with radius OR about point O.
Sheila should have the players stand along the major arc RS.



PTS: 1 DIF: Moderate REF: 8.3 Properties of Angles in a Circle
LOC: 9.SS1 TOP: Shape and Space (Measurement)
KEY: Problem-Solving Skills | Communication