KEY ALBERTA – 2017

PRACTICE TEST 1

1. Which of the following diagrams is the correct solution to the equation $-7 = -3x + 2$?

A. ▭ = ■■■

B. ▭ = □□□

C. ▭ = □□

D. ▭ = ■■

Use the following information to answer the next question.

Vivian has 14 fewer quarters than nickels.

2. If the total value of Vivian's coins is \$8.80, which of the following equations could be used to solve for the number of quarters that Vivian has?

A. $0.25x + 0.05(x + 14) = 8.80$

B. $0.05x + 0.25(x - 14) = 8.80$

C. $0.05x + 0.25(x + 14) = 8.80$

D. $0.25x - 0.05(x - 14) = 8.80$

Numerical Response

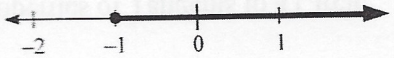
3. What is the value of x in the equation $2(x - 5) = -8x$? _____

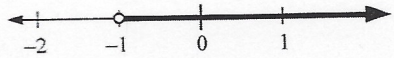
4. The solution of the inequality $18 + 12y \geq 15y$ is

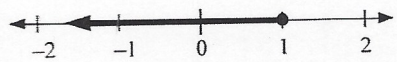
A. $y \geq 6$ B. $y \leq 6$

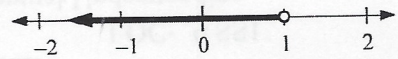
C. $y \geq 2$ D. $y \leq 2$

5. Which of the following number lines represents the solution to the inequality $3m - 1 > -4$?

A. 

B. 

C. 

D. 

Numerical Response

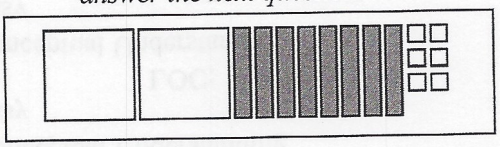
6. Solve $2x - 3 > 5$, and then identify which of the numbers -3, -4, -7, or 7 belongs to the solution set. _____

7. What is the constant term in the polynomial $2x + 3y + 2\ 750$?

A. x B. 2 750

C. 2 and 3 D. $2x + 3y$

Use the following information to answer the next question.



8. Which of the following polynomial expressions represents the given diagram?

A. $2x^2 - 8x + 6$

B. $2x^2 + 8x - 6$

C. $-2x^2 - 8x + 6$

D. $-2x^2 + 8x - 6$

Numerical Response

9. In the expression $2x + 5 + 3x + 2 + x + 6$, the sum of the numerical coefficients is _____.

10. Which of the following expressions is equivalent to the expression $(4x^2 + 3x - 9) + (2x + 2 + 6x^2)$?

A. $6x^2 + 5x - 7$

B. $6x^2 + 5x - 11$

C. $10x^2 + 5x - 7$

D. $10x^2 + 5x - 11$

11. What is the simplified form of $(4x + 3y) - (2x - 4y)$?

A. $2x + 7y$ **B.** $2x - 7y$

C. $2x - y$ **D.** $2x + y$

12. What is an equivalent form of the expression $\frac{2x^2 - 3x}{x}$?

A. $x - 2$ **B.** $x - 3$

C. $2x - 3$ **D.** $2x + 3$

13. The expression $(2x)(5xy)(3y)$ is equivalent to

A. $10xy^2$ **B.** $10x^2y^2$

C. $30x^2y^2$ **D.** $150x^2y^2$

14. When the expression $3y - 4x - 6$ is multiplied by $-5x$, the result is

A. $15xy - 20x^2 - 30x$

B. $15xy - 20x^2 + 30x$

C. $-15xy + 20x^2 + 30x$

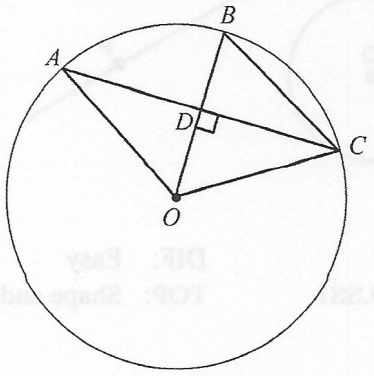
D. $-15xy + 20x^2 - 30x$

Numerical Response

15. When $11p^5 + 12p^4 + 6p + 2$ is multiplied by $7q^2r^3$, the coefficient of q^2r^3 is _____.

Use the following information to answer the next question.

The length of line segment $OD = 4.3$ units, and the length of chord $AC = 13.4$ units.



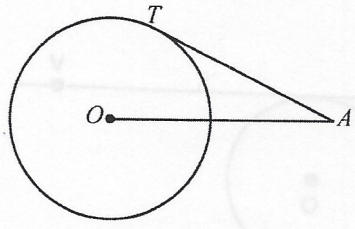
16. Rounded to the nearest tenth, the length of line segment BD is

A. 3.7 units **B.** 8.0 units

C. 9.8 units **D.** 14.1 units

Use the following information to answer the next question.

O is the centre of the given circle, and AT is tangent to the circle at point T. The length of AT is 10 units.



17. If the radius of the circle is 5 units, then the length of OA is

A. 10 units

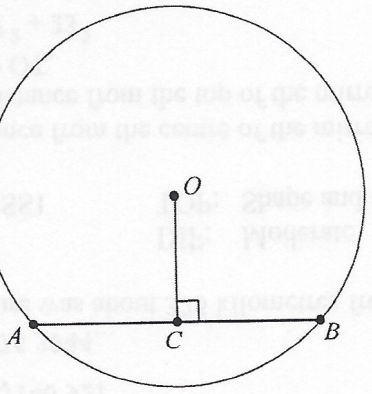
B. $5\sqrt{3}$ units

C. $5\sqrt{5}$ units

D. 15 units

Use the following information to answer the next question.

In a circle with centre O, AB is a chord and point C is a point on the chord.

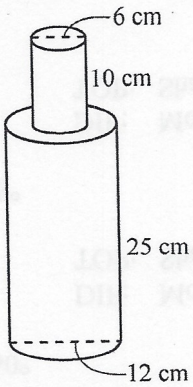


Numerical Response

18. If OC is perpendicular to AB, $AB = 8$ cm, and $OC = 3$ cm, determine the length of the radius of the circle. _____

Use the following information to answer the next question.

Thomas creates a composite 3-D object by gluing the base of a shorter cylinder to the top of a taller cylinder.



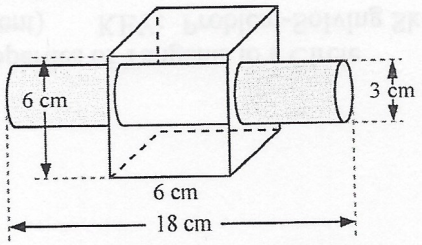
19. Using the value $\pi = 3.14$, what is the surface area of Thomas's object?

A. 1 111.48 cm^2 **B.** 1 168.08 cm^2

C. 1 356.48 cm^2 **D.** 1 412.00 cm^2

Use the following information to answer the next question.

The Hôtel de Glace in Quebec uses a system similar to the one shown in the given diagram to dispense its drinks. A pipe carrying the liquid runs through a block of ice in order to cool it for the guests at the hotel. The lengths of the pipe, located on either side of the block of ice, are equal.

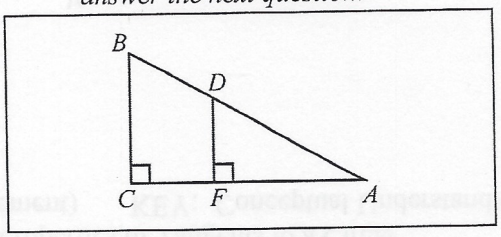


20. Rounded to a tenth of a square centimetre, how much insulation is needed to insulate the inside of the container used to hold the block of ice and pipes?

A. 113.0 cm^2 **B.** 201.9 cm^2

C. 314.9 cm^2 **D.** 329.0 cm^2

Use the following information to answer the next question.



21. Which of the following sets of ratios represent the three corresponding sides of the triangles?

A. $\frac{AC}{AD} = \frac{AB}{AF} = \frac{BF}{CD}$

B. $\frac{AF}{AD} = \frac{AB}{AC} = \frac{FD}{CB}$

C. $\frac{AC}{AF} = \frac{AB}{AC} = \frac{BF}{CB}$

D. $\frac{AB}{AD} = \frac{AC}{AF} = \frac{BC}{DF}$

22. Which of the following statements about similar figures is **true**?

A. Corresponding angles of similar figures are double in measure.

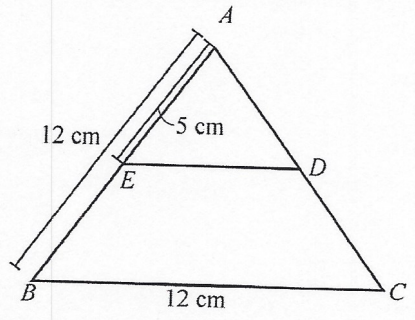
B. Corresponding sides of similar figures are identical in measure.

C. The ratios of the corresponding angles of similar figures are equal.

D. The ratios of the lengths of corresponding sides of similar figures are equal.

Use the following information to answer the next question.

The given figure shows ΔABC. The lengths of sides AB and BC are 10 cm and 12 cm, respectively. Points E and D are positioned on sides AB and AC such that sides BC and DE are parallel. The length of side AE is 5cm.



Numerical Response

23. What is the length of side DE? _____

Use the following information to answer the next question.

Sheldon is opening a new coffee shop and would like to know what types of desserts people prefer to have with their coffee. He is planning to send a small questionnaire to every home within a 15 km radius of the coffee shop.

24. The **main** problem with this type of data collection is

A. cost

B. ethics

C. privacy

D. use of language

Use the following information to answer the next question.

The Grade 6 student council at McKee School is trying to decide which desserts to sell at the school bake sale that will take place on the same afternoon as the Christmas concert. The students decide to create a questionnaire to survey a sample population about which types of desserts should be sold.

25. Which of the following sample populations will give the **most relevant** responses so that the student council can make the most appropriate decisions?

A. Adults only

B. Students only

C. As many parents and teachers as possible

D. As many parents, teachers, and students as possible

Use the following information to answer the next question.

Brianna and Lee are doing a survey to find the top five favourite television programs among Manitoba teenagers. To start, they compile a list of the most popular TV programs. Next, they plan to survey everyone in the lunch room of their junior high school during the noon hour. They will ask each student to select their five favourite television programs from a given list. They will repeat their survey every day for one week to make sure they include every student.

26. One reason their survey will **not** lead to valid results is that

A. the population was not identified

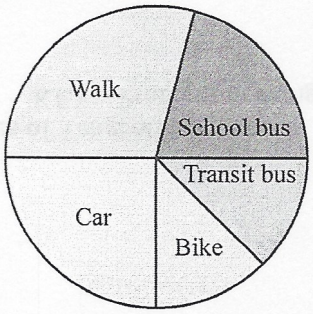
B. the survey question is not simple or relevant

C. they may not have included an equal number of boys and girls

D. surveying students at one school may not reflect the opinion of the population

Use the following information to answer the next question.

The Grade 5 students at Midtown School were surveyed to see how they get to school. The results are shown in the given graph.



May, Melody, Deborah, and Amy each wrote two conclusions based on the data in the graph. They then indicated if their conclusions were true or false.

27. Which of the students correctly indicated if their conclusions were true or false?

A.

May	
The number of students riding in cars is the same as the number of students riding the school bus.	True
The number of students riding in cars is the same as the number of students biking and taking the transit bus together.	False

B.

Melody	
Half of the students walk or take the school bus.	False
There are more students taking the transit bus than the school bus.	True

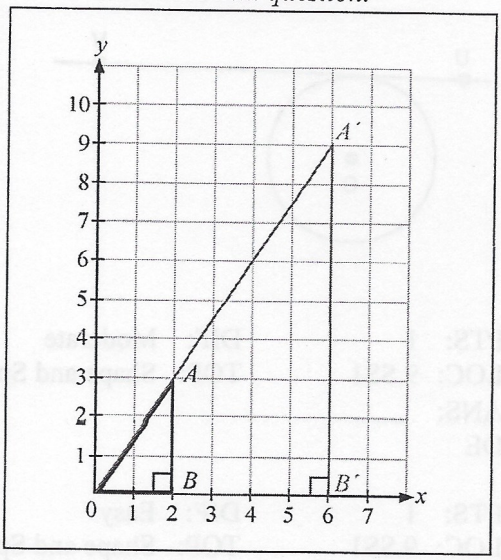
C.

Deborah	
There are more students taking the transit bus than the school bus.	False
The number of students riding in cars is the same as the number of students biking and taking the transit bus together.	False

D.

Amy	
More than half of the students walk or take the school bus.	False
The number of students riding in cars is the same as the number of students biking and taking the transit bus together.	True

Use the following information to answer the next question.



28. If the centre of enlargement is located at the origin, the scale factor that is used to transform ΔAOB into $\Delta A'O'B'$ is

A. 2 **B.** 3

C. 4 **D.** 6

Use the following information to answer the next question.

At 11:30 A.M. on a sunny day, a 6-foot tall man casts an 8-foot long shadow.

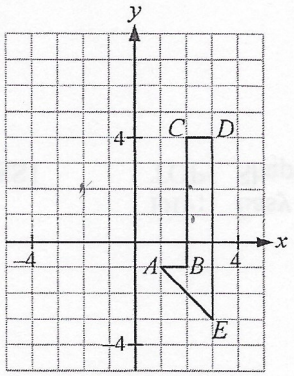
29. The length of the shadow cast by a 45-foot high building at the same time is

A. 33 ft **B.** 47 ft

C. 60 ft **D.** 85 ft

Use the following information to answer the next question.

Figure *ABCDE* is plotted on a coordinate plane.



30. When the given figure is translated U3 and L4, the coordinates of B' will be

A. (−3, 2) **B.** (−2, 2)

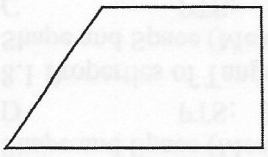
C. (2, −1) **D.** (−1, 0)

31. Which of the following figures does **not** have a line of symmetry?

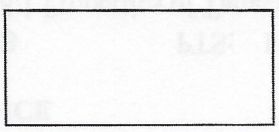
A.

B.

C.

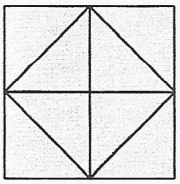


D.



Use the following information to answer the next question.

A tessellation is shown.



Numerical Response

32. The given tessellation has a rotational symmetry of order _____.

33. If $a^5 = 3^5$, simplify $(2a)^7$?

A. 3^7 **B.** 3^8

C. 6^6 **D.** 6^7

Use the following information to answer the next question.

Miro purchases hockey cards when he visits card shows. To track the total number of cards he purchases, c, he uses the equation $c = 2^n - 1$, where n is the number of shows he has attended.

Numerical Response

34. Miro stores his cards in a case that can hold up to 50 cards. How many cases would he need to store all of his cards after attending 9 card shows? _____

35. Simplified as a single power, the expression $5^3 \times 5^6 \times 5^4$ is

A. 5^{13} **B.** 5^{12}

C. 5^5 **D.** 5^{-1}

36. Simplify the expression $3^4 \times 3^7 \div 3^2$ to a single power.

A. 3^{13} **B.** 3^9

C. 3^8 **D.** 3^7

Numerical Response

37. Evaluate the expression $(-4 \times (-2)^3)^3$. _____

Use the following information to answer the next question.

A fruit vendor buys some oranges at a rate of \$0.50 per orange. He buys an equal number of bananas at a rate of \$0.25 per banana. The vendor's profit on each piece of fruit he sells is double the purchase price. At the end of the day, all the fruit has been sold, and the vendor's total revenue was \$30.00.

38. How many oranges did the vendor sell?

A. 10 **B.** 15

C. 20 **D.** 25

Use the following information to answer the next question.

Matthias works as a plumber. He has a length of copper pipe measuring $6\frac{1}{2}$ m. He knows that his next job requires three separate lengths of pipe: $1\frac{1}{5}$ m, $2\frac{1}{2}$ m, and $2\frac{2}{5}$ m.

39. After Matthias cuts these pieces, how much of his original pipe will he have left?

A. $\frac{1}{10}$ m **B.** $\frac{1}{5}$ m

C. $\frac{2}{5}$ m **D.** $\frac{3}{5}$ m

Use the following information to answer the next question.

John's teacher asked him to evaluate the following expression:

$(3.8 - 5.8)^4 - (-3)^3 - 5.6 \times 4.9$

40. Which of the operations in the expression should John complete first?

A. $(-3)^3$

B. $(-3)^3 - 5.6$

C. 5.6×4.9

D. $(3.8 - 5.8)$

Numerical Response

41. The lowest number of calculator keystrokes that can be used to solve the expression $21.4 \times (64.1 - 37.8)$ is _____.

42. Which of the following numbers is a perfect square?

A. 209 **B.** 1 000

C. 1 524 **D.** 1 764

43. Which of the following square roots is a rational number?

A. $\sqrt{1}$ **B.** $\sqrt{12}$

C. $\sqrt{48}$ **D.** $\sqrt{75}$

44. Using perfect squares, what is a reasonable estimate of the square root of 45?

A. 6.0 **B.** 6.3

C. 6.7 **D.** 7.0

45. What is the estimated square root of 93?

A. 8.5 **B.** 9

C. 9.6 **D.** 10

Use the following information to answer the next question.

Yolanda begins working at a farm at a starting wage of \$15/h. Every two months, Yolanda's hourly wage will increase by \$0.80/h. Yolanda asks four friends to help her calculate the number of months, n, it will take before she earns \$21.40/h. The equations and answers generated by each friend are given in the chart.

Friend	Equation	Number of Months
Jill	$W = 0.80n + 15$	8
Sasha	$W = 0.40n + 15$	16
Jasmine	$W = 15.8n$	5
Rachel	$W = 15.4n$	6

46. Which of Yolanda's friends came up with the correct equation and the correct answer?

A. Jill **B.** Sasha

C. Rachel **D.** Jasmine

Use the following information to answer the next question.

Tony scores x marks on an examination. Ronald, ranked first in the class, scores 42 marks more than Tony. The sum of Tony and Ronald's marks is 140.

47. Which of the following equations can be used to determine the value of x?

A. $x \times (x - 42) = 140$

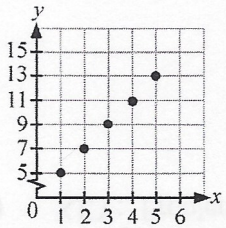
B. $x + (x \times 42) = 140$

C. $(x + x) \times 42 = 140$

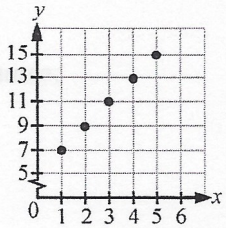
D. $x + (x + 42) = 140$

48. Which of the following graphs represents the linear relation $y = 2x + 5$?

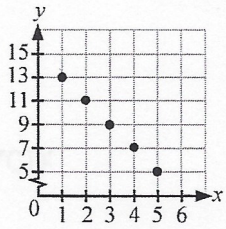
A.



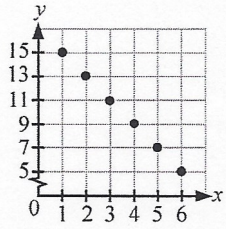
B.



C.

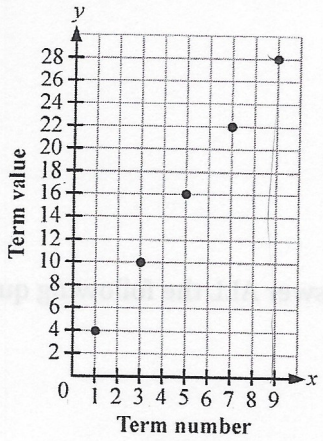


D.



Use the following information to answer the next question.

The given graph shows term numbers and the corresponding term values for a particular pattern.



49. In the given pattern, what is the term value when the term number is 9?

A. 22 **B.** 28

C. 20 **D.** 25

Use the following information to answer the next question.

Brent wants to go fishing and has a choice of going to one of four different lakes. After some research, he discovers these statistics:

Lake	Probability of Catching a Fish
Chinook Lake	0.43
Lake Willow	0.15
Marigold Lake	0.32
Lake Soho	0.04

50. In which of the given lakes would Brent **most likely** catch a fish?

A. Marigold Lake **B.** Chinook Lake

C. Lake Willow **D.** Lake Soho