Name: _____ Date: _____

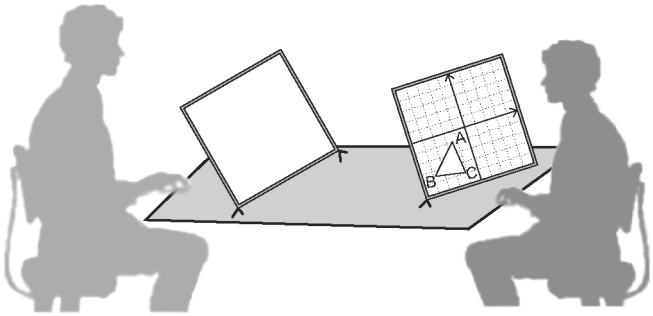
Final Exam Option 2
Multiple Choice and Numerical Response

Record your answers on the answer sheet provided.

Games and Challenges
Many games and challenges make use of mathematics. Use your mathematical skills to solve the following problems related to games or team challenges.

Use this information to answer #1.

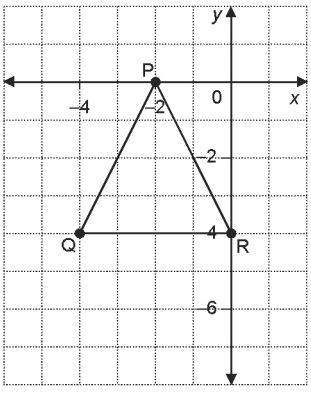
Kali and Juan are playing a strategy game that involves a coordinate grid.



1. What are the signs of the *x*-coordinate and *y*-coordinate in quadrant III?
A (−, −) **B** (−, +) **C** (+, +) **D** (+, −)

Use this information to answer #2.

△PQR is translated 2 units right and 6 units down to △P'Q'R'.



2. What are the coordinates of P'?
A (−8, 2) **B** (−4, −6) **C** (−1, −5) **D** (0, −6)

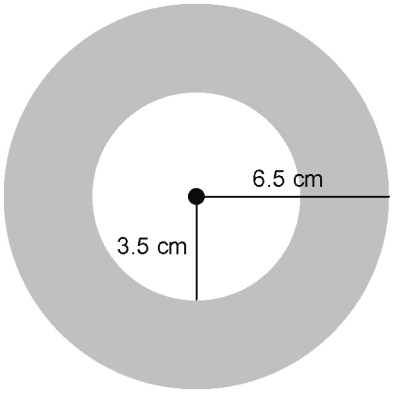
Name: _____ Date: _____

Numerical Response

3. Point F(−4, 6) is reflected in the *y*-axis and then in the *x*-axis. In which quadrant does point F'' lie?

Use this information to answer #4.

The letter *O* has been drawn with the dimensions shown.

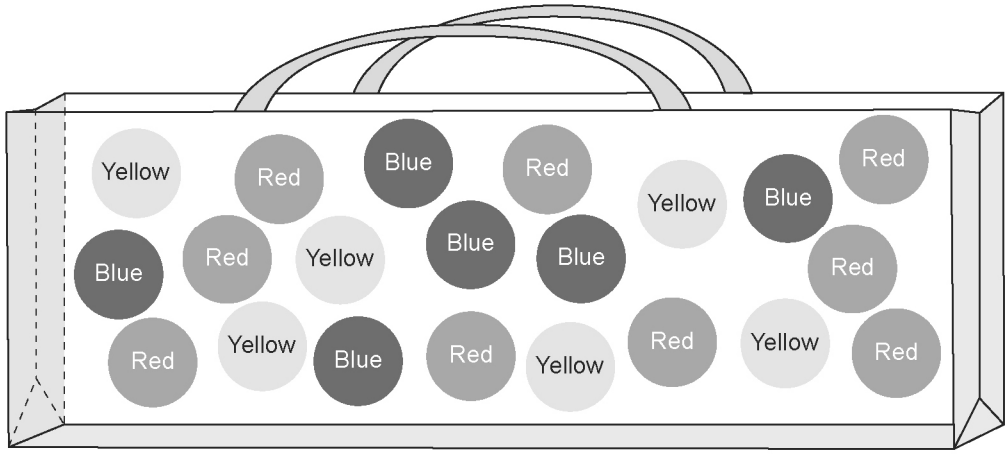


4. The area of the letter *O*, to the nearest square centimetre, is

A 133 cm^2 **B** 94 cm^2 **C** 75 cm^2 **D** 39 cm^2

Use this information to answer #5.

A bag holds 9 red marbles, 6 blue marbles, and 6 yellow marbles. You reach in and pull out a marble.



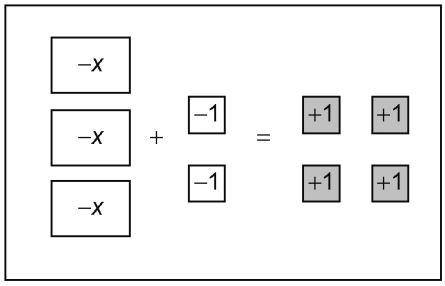
5. What is the probability that the marble you choose is blue?

A $\frac{9}{21}$ **B** $\frac{15}{21}$ **C** $\frac{3}{7}$ **D** $\frac{2}{7}$

Name: _____ Date: _____

Use this information to answer #6.

In a game, Robert drew the following card.



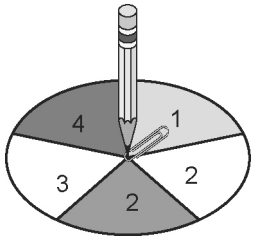
6. Robert had to write an equation that represented his card. The equation he wrote was correct. Which equation did he write?

A $3x - 2 = 4$ **B** $-3x - 2 = 4$

C $-3x + 2 = 4$ **D** $3x + (-2) = 4$

Use this diagram to answer #7.

A spinner is spun and an eight-sided die labelled 1, 2, 3, 4, 5, 6, 7, 8 is rolled.



7. What is the probability of getting 1 on a spin of the spinner and 2 on a toss of the die?

A $\frac{1}{32}$ **B** $\frac{1}{40}$ **C** $\frac{1}{12}$ **D** $\frac{1}{13}$

Use this information to answer #8.

A coin is tossed at the same time that a 12-sided die is rolled.

Numerical Response

8. What is the total number of possible outcomes in the sample space?

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Use this information to answer #9.

A six-sided die is rolled 30 times with the following results:

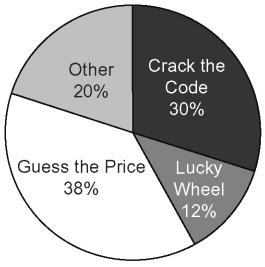
Face	1	2	3	4	5	6
Frequency	𝍸	𝍸	𝍸 |	𝍸	𝍸 |||	||

9. The experimental probability of rolling a 5 is ☐. The theoretical probability of rolling a 5 is ☐.

A $\frac{8}{30}, \frac{5}{6}$ **B** $\frac{1}{30}, \frac{1}{6}$ **C** $\frac{4}{15}, \frac{1}{5}$ **D** $\frac{4}{15}, \frac{1}{6}$

Use this information to answer #10 and #11.

In a survey, 420 people were asked to identify their favourite TV game show. The results are shown on the circle graph.



10. How many people chose Crack the Code as their favourite game show?

A 294 **B** 126 **C** 70 **D** 30

Numerical Response

11. To the nearest degree, what is the measure of the central angle for the Lucky Wheel game show?

12. The equation $-4d + 2 = -1$ is written on a game card that Lianne chooses. What might be her first step in solving the equation?

A Add 1 to both sides. **B** Divide both sides by –4.

C Subtract 2 from both sides. **D** Divide both sides by 2.

Use this information to answer #13.

You won a prize by correctly answering the following skill-testing question: What is the correct placement of brackets to make the following equation true: $15 - 6 \times 2 + 4 = 7$?

13. What was your answer to the skill-testing question?

A $(15 - 6) \times (2 + 4) = 7$ **B** $15 - (6 \times 2) + 4 = 7$

C $(15 - 6) \times 2 + 4 = 7$ **D** $15 - 6 \times (2 + 4) = 7$

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Sports and Recreation

Athletes often use strategies in sports that are based on mathematical calculations. People who design parks and recreational areas also use mathematical skills in their work. Apply your understanding of mathematics to solve problems related to sports and recreation.




Use this information to answer #14 to #17.

Students at Athletic Academy decided to challenge each other to a soccer shootout to see who could kick the most goals. Each student had 15 attempts.

Student	Number of Goals
Nyla	3
Daniel	5
Paula	9
Ron	7
Jena	3
Pujub	9
Saki	8
Serge	7
Kaleb	8
Jill	3
Marlys	5
Sven	5

14. What is the median of the data?

A 5 **B** 6 **C** 7 **D** 8

15. What is the range of the data?

A 3 **B** 4 **C** 5 **D** 6

16. What is the mean of the data?

A 5 **B** 6 **C** 7 **D** 8

17. Thom's goals were not used in the measures of central tendency. What is his possible outlier score?

A 2 **B** 6 **C** 10 **D** 15

Name: _____ Date: _____

Use this information to answer #18 and #20.

Four golfers have the following results:

Par 72	
Golfer	**Score Under Par**
Vince	−12
Dahlia	−5
Renata	−11
Gary	−8

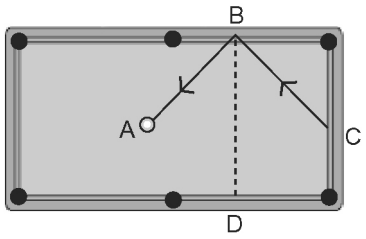
18. The golfer with the lowest score wins the tournament. The golfer who won is
A Vince **B** Dahlia **C** Renata **D** Gary

19. The difference between the golfer who came in first place and the golfer who came in last place is
A −7 **B** −4 **C** 4 **D** 7

20. Who came in second place?
A Vince **B** Dahlia **C** Renata **D** Gary

Use this information to answer #21.

Joseph is playing pool. He makes a shot and the ball bounces off of the side of the pool table at an angle of 72º. This angle is shown on the diagram as ∠ABC.

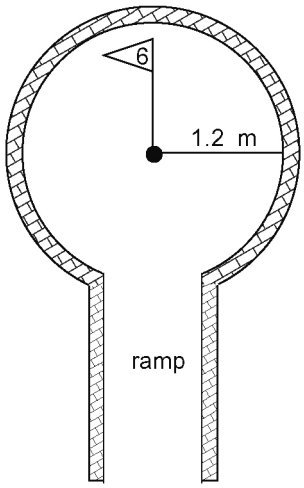


21. The line segment BD is an angle bisector. What is the measure of ∠ABD?
A 144º **B** 72º **C** 36º **D** 18º

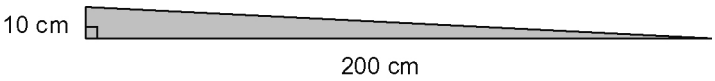
Name: _____ Date: _____

Use this information to answer #22 to #25.

You are building a mini-golf course. Hole 6 begins with a ramp that slopes up to a circular area.



22. Each of the two sides of the ramp form triangles. How much wood will be needed for the two sides?



A 2000 cm² **B** 1000 cm² **C** 200 cm² **D** 100 cm²

23. The inside of the circular area will be covered by green turf. To the nearest tenth of a metre, approximately how much turf will you need?
A 7.5 m² **B** 4.5 m² **C** 3.8 m² **D** 1.2 m²

24. There are 192 paving stones at Hole 6. The ramp is lined by 88 of them. The number of ramp stones expressed as a fraction of all the stones, in lowest terms is
A $\frac{88}{192}$ **B** $\frac{104}{192}$ **C** $\frac{11}{24}$ **D** $\frac{13}{24}$

25. To the nearest whole percent, what percent of stones line the circular area?
A 23% **B** 46% **C** 54% **D** 84%

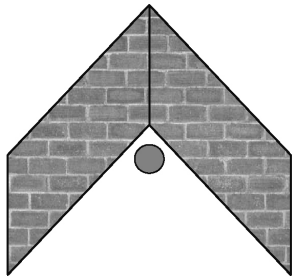
26. Alex sinks 40% of his putts in a season. If he had 495 putts over the summer, how many will he miss?
A 40 **B** 60 **C** 198 **D** 297

Name: _____ Date: _____

Numerical Response

Use this information to answer #27.

Two walls form an angle at Hole 5 of the mini-golf course. If you putt straight along the angle bisector of the two walls, you will get the ball in the hole.



27. One angle created by the bisector measures 41º. What is the measure of the angle between the two walls?

Use this information to answer #28.

You decide to add a go-cart track beside the mini-golf course. It costs $36 500 to buy nine go-carts.

28. The cost of one cart to the nearest cent is
A $365.00 **B** $405.56 **C** $3650.00 **D** $4055.56

Use this information to answer #29.

To help maintain the go-cart track, you need the following materials:
- 2 cans of sealer at $20.99 each
- 14 cans of paint at $10.50 each

29. What is the cost for the materials, with 5% GST included, to the nearest cent?
A $176.39 **B** $187.40 **C** $188.98 **D** $198.43

Use this information to answer #30.

Golf balls fit three to a box. Each ball has a mass of approximately 44.8 g. The box that they are packed in has a mass of approximately 15 g.

30. The shipping cartons hold 48 boxes. What is the mass of 48 boxes of golf balls, to the nearest whole gram?
A 720 g **B** 6451 g **C** 7171 g **D** 14 340 g

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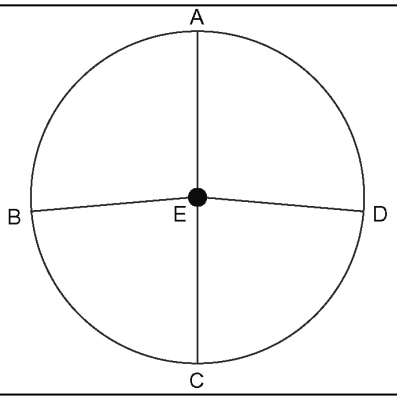
Use this information to answer #31.

A game is played in a circle painted on the ground. The diameter AC bisects $\angle$BED.



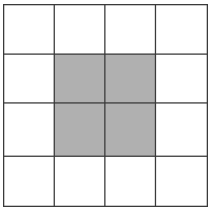
31. If the measure of $\angle$CED = 85º, the measure of $\angle$BED is

A 170º **B** 60º **C** 95º **D** 85º

Numerical Response

Use this information to answer #32.

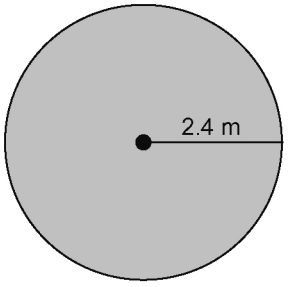
Tiles at the local swimming pool have the following design.



32. What is the ratio of the shaded tiles to the total tiles? Express your answer as a decimal number.

Use this information to answer #33 and #34.

A circular cement pad in the schoolyard is used for tether ball. The circular pad has a radius of 2.4 m.



33. What is the circumference of the circular cement pad to the nearest hundredth of a metre?

A 7.54 m **B** 15.07 m **C** 22.61 m **D** 30.41 m

34. What is the area of the circular cement pad, to the nearest tenth of a square metre?

A 15.1 m^2 **B** 18.1 m^2 **C** 36.2 m^2 **D** 72.4 m^2

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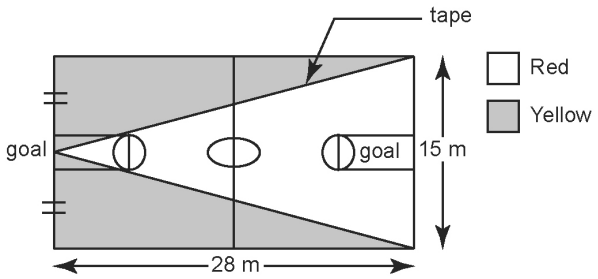
35. Mark misses 30% of his shots in a basketball game. If he shoots 20 times in the next game, how many baskets can he expect to make?

A 2 **B** 6 **C** 14 **D** 20

Use this information to answer #36 to #38.

In a variation of floor hockey, tape placed on the gym floor divides the playing area into triangles. The red team can play only in the large triangle. The yellow team can play only in the two smaller triangles.



36. What is the area of the yellow team's playing area?

A 420 m^2 **B** 210 m^2 **C** 120 m^2 **D** 105 m^2

37. What is the total playing area of the gym floor?

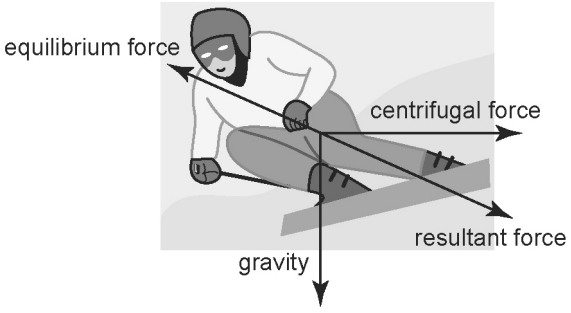
A 420 m^2 **B** 210 m^2 **C** 120 m^2 **D** 105 m^2

38. The ratio that represents the $\frac{\text{playing area of the yellow team}}{\text{playing area of the red team}}$ is

A $\frac{1}{1}$ **B** $\frac{1}{2}$ **C** $\frac{2}{1}$ **D** $\frac{3}{1}$

Use this information to answer #39.

Ski racers use different forces to obtain the best position when going around a gate.



39. The forces that create perpendicular lines are

A resultant and equilibrium forces **B** gravity and equilibrium forces
C gravity and centrifugal forces **D** centrifugal and resultant forces

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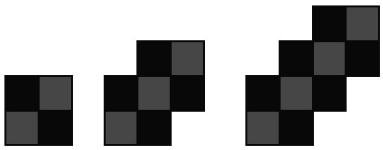
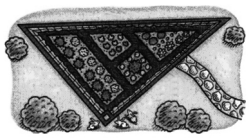
Math in Daily Life

People use a variety of mathematical concepts and processes to solve many problems that they encounter every day. Make connections with your understanding of mathematics to solve problems.

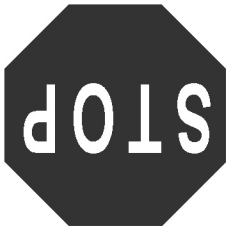




Use this diagram to answer #40.

40. Which stop sign shows a 180° clockwise rotation?

A

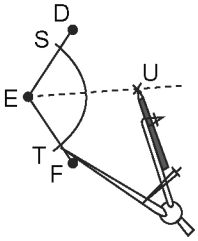


B

C

D

Use this diagram to answer #41.



41. What is being constructed?

A angle bisector
B congruent line
C parallel line
D perpendicular bisector

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42. Which number is the smallest?

A $\frac{1}{3}$ **B** 0.35 **C** $\frac{1}{4}$ **D** 29%

43. What type of outcome is a successful result in a probability experiment?

A random **B** theoretical **C** favourable **D** independent

44. What is the greatest common factor of 24 and 32?

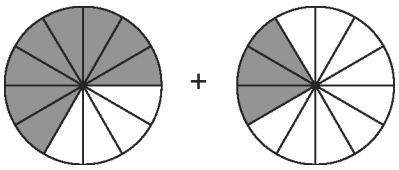
A 4 **B** 8 **C** 12 **D** 16

45. Use the divisibility rule for 3 to determine which number is divisible by 3.

A 468 **B** 332 **C** 244 **D** 142

Use this information to answer #46.

You wrote the addition statement for the diagram shown. Then, you determined the sum.



46. What did you write?

A $\frac{2}{3}+\frac{1}{4}=\frac{11}{12}$ **B** $\frac{8}{12}+\frac{3}{12}=\frac{11}{24}$ **C** $\frac{2}{3}+\frac{3}{12}=\frac{5}{15}$ **D** $\frac{8}{12}+\frac{1}{3}=\frac{9}{15}$

Numerical Response

47. What is the value for x in $4x + 15 = 79$?

Numerical Response

48. What is the value of the circumference divided by the diameter of any circle? Give your answer to the nearest hundredth.

Numerical Response

49. What is the value of $2\frac{3}{5}+1\frac{1}{4}$ expressed as a decimal?

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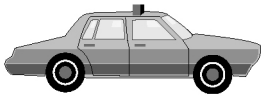
Stores and Services

The daily operations of a store or service require the use of mathematics in a variety of ways. Use your mathematics skills to solve problems related to stores and services.



Use this information to answer #50.

Maylynn and Allan decide to put new flooring in their restaurant dining room. The room measures 38.8 m by 19.5 m.

50. Using relative size estimation, what is the best estimate for the area of flooring required?

A 120 m² **B** 800 m^2 **C** 1600 m^2 **D** 8000 m^2

Use this information to answer #51.

The sign shows the daily specials at Flavours Restaurant. George and Sara buy a large bowl of soup, two small vegetarian wraps, and a large salad.

	Small	Large
Soup	$2.25	$3.95
Vegetarian wrap	$3.50	$5.95
Salad	$3.25	$4.95

51. Before tax, what is their total?

A $12.40 **B** $14.20 **C** $15.90 **D** $17.40

Use this information to answer #52.

Mahmoud bought two shirts for $28 each and one pair of pants for $98. He received a 25% discount on the total cost.

52. What was the amount he paid before taxes?

A $167.50 **B** $157.50 **C** $115.50 **D** $105.50

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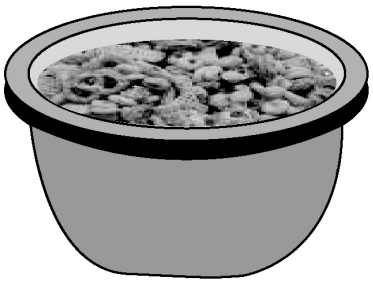
Use this information to answer #53.

Abena is making a snack mix to sell at her health food store. The bowl she is using can hold a maximum of eight scoops. She puts $3\frac{1}{3}$ scoops of pretzels and $2\frac{3}{4}$ scoops of almonds into the bowl.



53. What is the maximum number of scoops of raisins Abena can add so that the mix fits in the bowl?

A $1\frac{1}{12}$ **B** $1\frac{11}{12}$ **C** $2\frac{3}{7}$ **D** $2\frac{4}{7}$

Use this information to answer #54 to #57.

Best Ride Taxi charges a flat rate of $3.50, plus $2.25 for every kilometre travelled. To calculate the total cost, you can use the relationship $C = 3.50 + 2.25d$, where d is the distance travelled, in kilometres, and C is the total cost, in dollars.

54. Which table of values matches the relationship $C = 3.50 + 2.25d$?

A

d	*C*
0	3.50
1	4.50
2	5.50
3	6.50

B

d	*C*
1	3.50
2	5.50
3	8.50
4	12.50

C

d	*C*
0	2.25
3	10.25
5	14.75
7	19.25

D

d	*C*
0	3.50
3	10.25
5	14.75
7	19.25

55. In the relationship $C = 3.50 + 2.25d$, what is the value of 3.50 called?

A variable **B** coefficient **C** expression **D** constant

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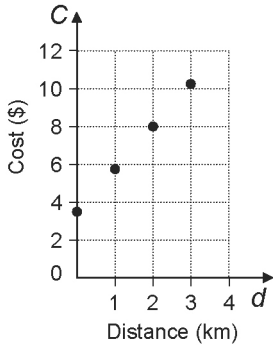
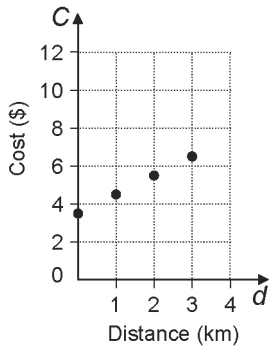
56. Which graph shows the linear relation $C = 3.50 + 2.25d$?

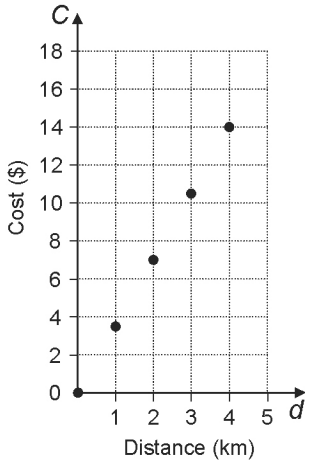
A



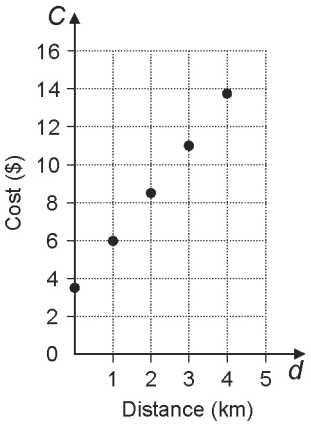
B



C



D



57. Jared takes a 42-km taxi ride. What does it cost?

A $82.75 **B** $98.00 **C** $105.00 **D** $108.50

Use this information to answer #58.

Rob goes to the restaurant daily for lunch. He orders a salad and a soup from the menu shown.

Lunch Menu
Choose a soup and salad.

Soups	
Beef Vegetable	$1.25
Chicken Noodle	$1.25
Mushroom	$1.25
Tomato	$1.25
Salads	
Fruit Salad	$1.50
Caesar Salad	$1.75
Greek Salad	$1.75
Macaroni Salad	$1.50

58. If Rob's lunch is different each day, how long will it take him to try all of the possible combinations?

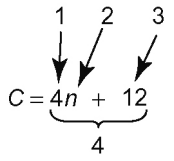
A 7 days **B** 8 days **C** 11 days **D** 16 days

Name: _____ Date: _____

Numerical Response

Use this information to answer #59.

Arleen is holding a tournament banquet at a restaurant. She can calculate the total cost of the food for the banquet using the relationship $C = 4n + 12$, where C is the total cost, in dollars, and n is the number of people attending. On the diagram, a letter identifies each part of the relationship.



59. Identify each of the following parts by its number: the variable is ☐, the expression is ☐, the coefficient is ☐, and the constant is ☐.

Use this information to answer #60.

To determine the profit per person for the tournament dinner, Arleen can use the relationship $3p + 8 = 29$, where p is the profit, in dollars.

60. The profit per person was

A \$6.00 **B** \$7.00 **C** \$12.67 **D** \$17.25