Name: _____ Date: _____

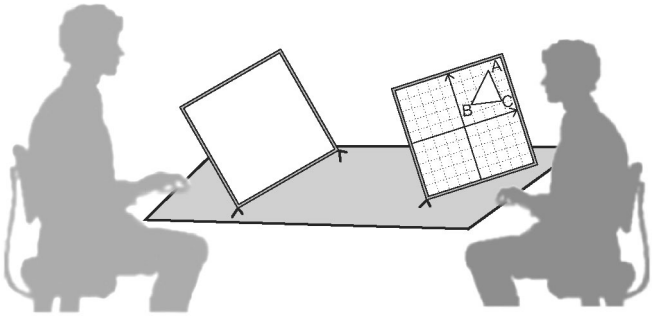
Final Exam Option 1
Multiple Choice and Numerical Response

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 problems related to games or team challenges.

Use this information to answer #1.

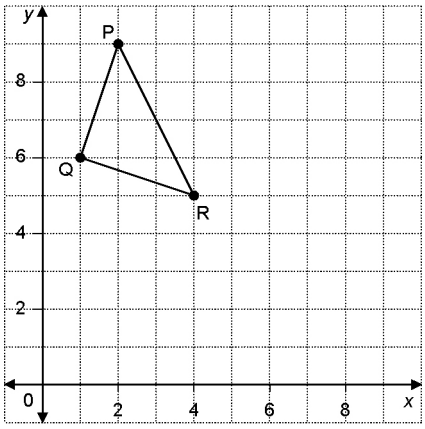
Kali and Juan are playing a strategy game that involves a coordinate grid.



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

Use this information to answer #2.

Juan's ΔPQR is translated 3 units right and 4 units down to ΔP'Q'R'.



2. What are the coordinates of R'?
A (0, 8) **B** (3, 4) **C** (7, 1) **D** (8, 2)

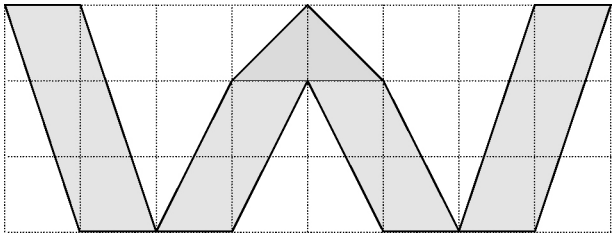
Name: _____ Date: _____

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 diagram to answer #4.

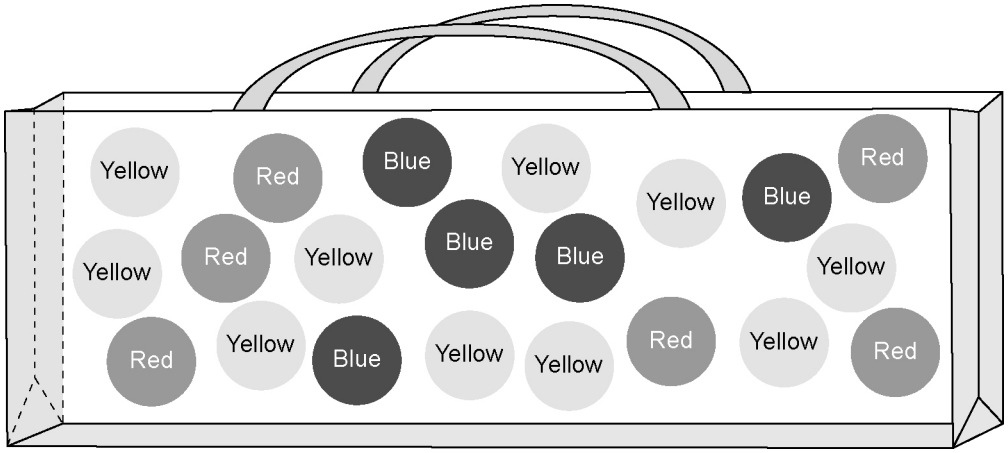
The letter W is drawn on centimetre grid paper.



4. The area of the letter W is
A 11 cm^2 **B** 12 cm^2 **C** 13 cm^2 **D** 14 cm^2

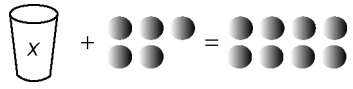
Use this diagram to answer #5.

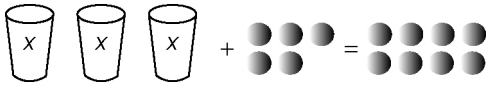
A bag contains 21 balls. You choose one ball at random.

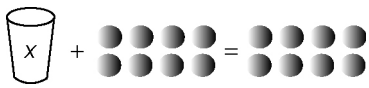


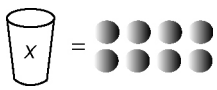
5. What is the probability that the ball you choose is yellow?
A $\frac{11}{21}$ **B** $\frac{10}{21}$ **C** $\frac{6}{21}$ **D** $\frac{5}{21}$

6. Robert has some marbles in a cup. He goes to the store and buys 5 more marbles. He now has a total of 8 marbles. Which diagram shows how many marbles Robert has?

A 

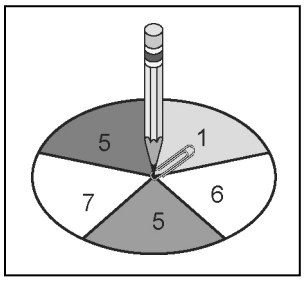
B 

C 

D 

Name: _____ Date: _____

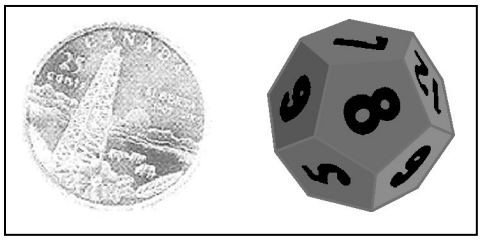
Use this diagram to answer #7.



7. The spinner is spun twice. What is the probability of spinning a 5 both times?

A $\frac{1}{25}$ **B** $\frac{4}{25}$ **C** $\frac{2}{5}$ **D** $\frac{4}{3}$

Use this diagram to answer #8.



Numerical Response

8. A coin is tossed at the same time as a 12-sided die is rolled. What is the total number of possible outcomes in the sample space?

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

9. The experimental probability of rolling a 3 is ☐. The theoretical probability of rolling a 3 is ☐.

A $\frac{7}{30}$; $\frac{5}{6}$ **B** $\frac{1}{30}$; $\frac{1}{6}$ **C** $\frac{1}{6}$; $\frac{1}{5}$ **D** $\frac{1}{5}$; $\frac{1}{6}$

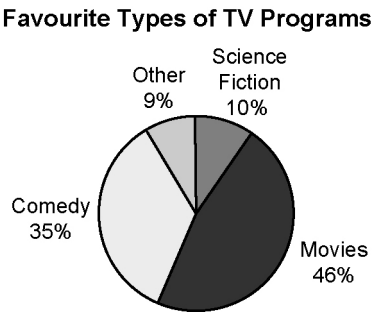
Numerical Response

10. A circular game mat has a diameter of 6 m. What is the area of the mat, to the nearest tenth of a metre?

Name: _____ Date: _____

Use this information to answer #11.

In a survey, 240 people were asked to identify their favourite type of TV program. The results are shown on the circle graph.



11. How many people chose comedy as their favourite?
A 156 **B** 110 **C** 84 **D** 24

12. The equation $3d - 7 = 5$ is written on a game card that Lianne chooses. What might be her first step in solving the equation?
A Subtract 5 from both sides.
B Add 7 to both sides.
C Divide both sides by 3.
D Divide both sides by 5.

Use this information to answer #13 to #16.

Students at Green Thumb Collegiate accepted a challenge to see who could grow the biggest pumpkin. The table shows the results, to the nearest kilogram.

Student	Jane	Tim	Mike	Molly	Emma	Joe	Jim	Viola
Mass of Pumpkin (kg)	36	10	8	13	11	13	14	15

13. What is the mean pumpkin mass?
A 12 kg **B** 13 kg **C** 14 kg **D** 15 kg

14. What is the median pumpkin mass?
A 12 kg **B** 13 kg **C** 14 kg **D** 15 kg

15. What is the mode pumpkin mass?
A 12 kg **B** 13 kg **C** 14 kg **D** 15 kg

16. What is a possible outlier in this data set?
A 36 **B** 14 **C** 10 **D** 8

Name: _____ Date: _____

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 #17 and #18.

The Green family has a chance to win free tickets to local basketball games. Help them win by determining the correct answers to the following skill testing questions.

17. Brackets are missing from the expression $4 + 8 \times 4.1 - 10$. The answer is 39.2. Which expression shows the correct placement of the brackets?

A $4 + 8 \times (4.1 - 10)$

B $(4 + 8) \times 4.1 - 10$

C $4 + (8 \times 4.1) - 10$

D $(4 + 8) \times (4.1 - 10)$

18. Which percent has the largest value?

A 12% of 200 **B** 15% of 150 **C** 35% of 50 **D** 30% of 70

Use this information to answer #19.

A box of eight baseballs has a total mass of 1238.4 g. Each ball has a mass of 142.6 g.

19. What is the mass of the box without the baseballs?

A 1140.8 g **B** 240.2 g **C** 97.6 g **D** 89.6 g

Name: _____ Date: _____

Use this table to answer #20.

Robin's physical education class will be going outside for classes in the coming week. Robin checks the weekly weather forecast. The table shows the average low temperatures for the week.

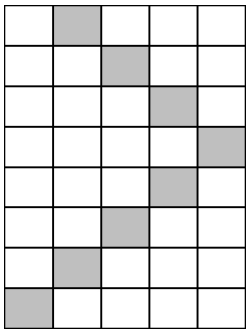
Day	Average Low Temperature (°C)
Monday	−6 °C
Tuesday	−1 °C
Wednesday	2 °C
Thursday	−3 °C
Friday	4 °C

20. What is the difference in temperature between Monday and Friday?
A 10 °C **B** 2 °C **C** −2 °C **D** −10 °C

21. The stands at a school stadium create an angle of ∠URV. The measure of ∠URV is 140°. The line segment RW is the angle bisector. The measure of ∠WRV is
A 280° **B** 140° **C** 70° **D** 35°

Use this diagram to answer #22.

The walkway in a park has this tile pattern.



Numerical Response

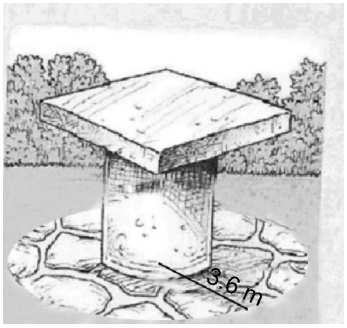
22. The shaded area is expressed as a fraction of the total area. This fraction expressed as a percent is

23. Mohen sinks 70% of his baskets in a basketball game. If he shoots 40 times in the next game, how many baskets can he expect to miss?
A 12 **B** 28 **C** 40 **D** 70

Name: _____ Date: _____

Use this diagram to answer #24 and #25.

The recreation centre put picnic tables on circular pads. Each pad has a radius of 3.6 m.



24. The circumference of the pad, to the nearest tenth of a metre is
A 11.3 m^2 **B** 11.3 m **C** 22.6 m^2 **D** 22.6 m

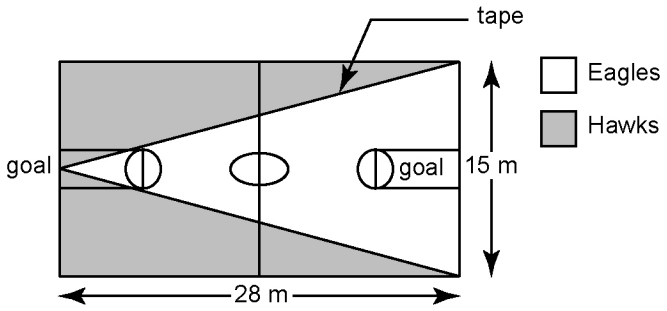
25. The area of the pad is
A 11.3 m^2 **B** 22.6 m^2 **C** 35.5 m^2 **D** 40.7 m^2

Numerical Response

26. A flower bed forms ∠ABC. ∠ABC is bisected to create two angles that each measure 39°. What is the measure of ∠ABC in degrees?

Use this diagram to answer #27 to #29.

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



27. What is the area of the Eagles' playing space?
A 420 m^2 **B** 210 m^2 **C** 120 m^2 **D** 105 m^2

28. 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

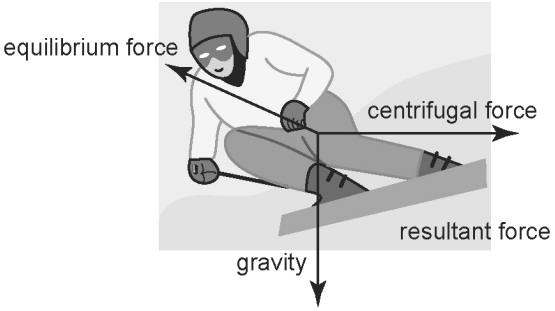
29. The fraction that represents the $\frac{\text{playing area of the Eagles}}{\text{playing area of the Hawks}}$ is

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

Name: _____ Date: _____

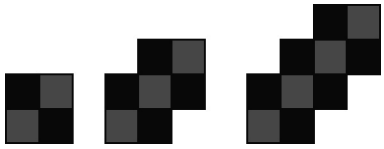
Use this diagram to answer #30.

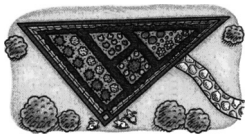
Ski racers take advantage of different forces in order to obtain the best position when going around a gate.



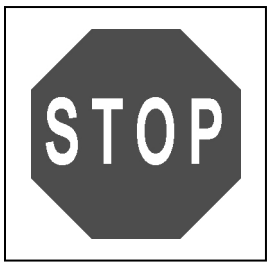
30. The forces that create perpendicular lines are
- **A** resultant and equilibrium forces
- **B** gravity and equilibrium forces
- **C** gravity and centrifugal forces
- **D** centrifugal and resultant forces

Math in Daily Life
People use a variety of mathematical concepts and processes to solve many problems that they encounter everyday. Make connections with your understanding of mathematics to solve problems.



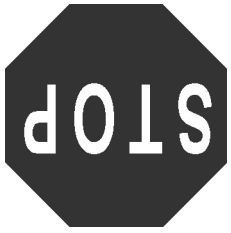


Use this diagram to answer #31.



31. Which stop sign shows a 90° counterclockwise rotation?

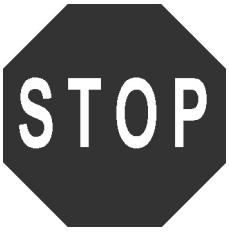
A



B

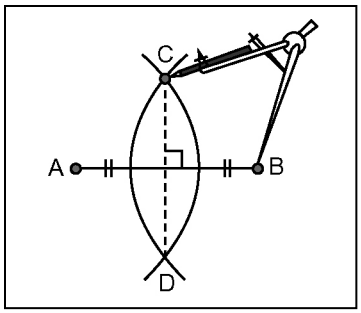
C

D



Name: _____ Date: _____

Use this diagram to answer #32.



32. What is being constructed?
A angle bisector
B congruent line
C parallel line
D perpendicular bisector

33. Which number is smallest?
A 0.65 **B** $\frac{2}{3}$ **C** 70% **D** $\frac{3}{4}$

34. The probability of an event occurring determined from a list of all possible outcomes is called [ ] probability.
A random **B** favourable **C** theoretical **D** experimental

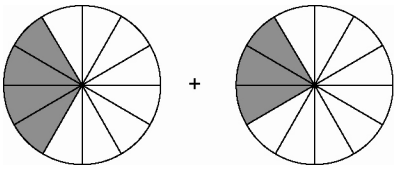
35. What is the greatest common factor of 24 and 36?
A 16 **B** 12 **C** 8 **D** 4

36. What is $\frac{24}{42}$ written in lowest terms?
A $\frac{1}{2}$ **B** $\frac{3}{6}$ **C** $\frac{4}{7}$ **D** $\frac{12}{21}$

37. Use the divisibility rules for 4 to determine which number is *not* divisible by 4.
A 468 **B** 332 **C** 244 **D** 142

Use this diagram to answer #38.

You write the addition statement shown by the diagram, and then determine the sum.

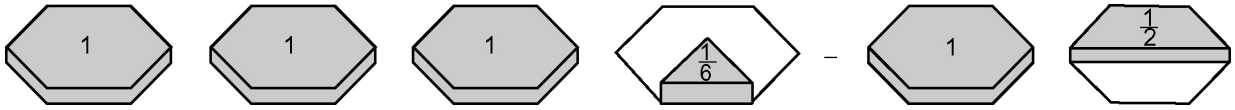


38. The mathematical statement that you write is
A $\frac{1}{3}+\frac{1}{4}=\frac{7}{12}$ **B** $\frac{4}{12}+\frac{3}{12}=\frac{7}{24}$ **C** $\frac{1}{3}+\frac{3}{12}=\frac{4}{15}$ **D** $\frac{4}{12}+\frac{1}{3}=\frac{5}{15}$

Name: _____ Date: _____

Use this diagram to answer #39.

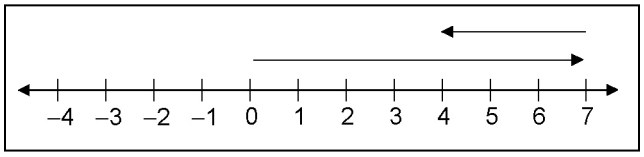
You write the subtraction statement shown by the diagram, and then determine the difference.



39. The mathematical statement that you write is

A $3\frac{5}{6} - 1\frac{1}{2} = 2\frac{4}{6}$ **B** $3\frac{5}{6} - 1\frac{1}{2} = 2\frac{1}{3}$ **C** $3\frac{1}{6} - 1\frac{1}{2} = 2\frac{1}{3}$ **D** $3\frac{1}{6} - 1\frac{1}{2} = 1\frac{2}{3}$

Use this diagram to answer #40.



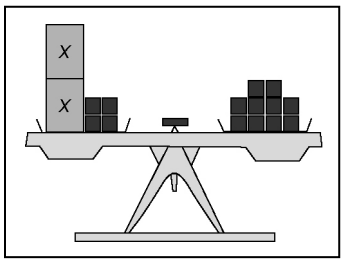
40. Which expression does the diagram represent?

A $-7 + 3$ **B** $7 - (-3)$ **C** $7 + (-3)$ **D** $-7 - 3$

41. Which statement is correct?

A $-5 + 6 = 5 + (-6)$
B $-5 + 6 = 5 - (-6)$
C $-5 + 6 = -5 - 6$
D $-5 + 6 = -5 - (-6)$

Use this diagram to answer #42 and #43.



42. Which phrase does the scale represent?

A a number added to four equals ten
B twice a number added to four equals ten
C four times a number added to two equals ten
D a number added to positive four equals negative ten

43. What number does x represent?

A $x = 2$ **B** $x = 3$ **C** $x = 4$ **D** $x = 6$

Name: _____ Date: _____

Numerical Response

44. Solve the equation $3x - 11 = 25$.

Numerical Response

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

Numerical Response

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

Restaurants and Taxi Services

The daily operations of a restaurant require the use of mathematics in a variety of ways. Taxis are frequently used by people coming to and from restaurants. Use your mathematical skills to solve problems related to restaurants and taxi services.

Use this information to answer #47.

Martin and Arleen decide to put new flooring in their restaurant dining room. The room measures 32.67 m by 46.9 m.

47. Using relative size estimation, what is the best estimate for the amount of flooring required?
A 1200 m² **B** 1500 m² **C** 1600 m² **D** 2000 m²

Name: _____ Date: _____

Use this information to answer #48.

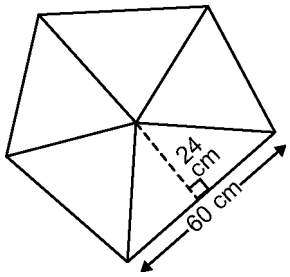
The sign shows the daily specials at the Flavour Food Market. Martin buys 2 kg of king crab legs, 1 bag of potatoes, 2 loaves of French bread, and 1 apple pie.

Alaskan king crab legs	$39.00/kg
Potatoes	$8.99/10 kg
French bread	$1.69/loaf
Apple pie	$2.49

48. What is the total cost before tax?
A $52.17 **B** $53.86 **C** $92.86 **D** $93.66

Use this diagram to answer #49.

A tablecloth design has five triangles of equal size.



49. What is the total area of the tablecloth?
A 7220 cm^2 **B** 3600 cm^2 **C** 720 cm^2 **D** 360 cm^2

Use this information to answer #50.

Martin bought a chef jacket for $32 and three pairs of chef pants for $78. He received a 30% discount on the total cost of the clothing.

50. What was the amount he saved?
A $80 **B** $77 **C** $33 **D** $30

Name: _____ Date: _____

Use this table to answer #51.

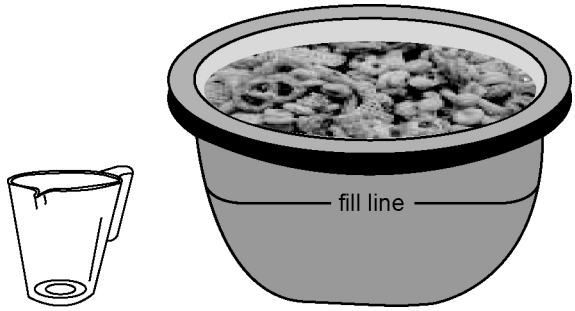
The table shows the tips that Su-en received and the total of all of the tips for four nights.

Night	Su-en's Tips ($)	Total of Tips ($)
1	86	125
2	84	132
3	79	118
4	90	143

51. On which night did Su-en receive the highest percent of tips?
A 1 **B** 2 **C** 3 **D** 4

Use this information to answer #52.

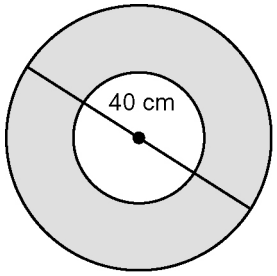
Arleen is preparing a bowl of snack mix for each table. Each bowl can hold a maximum of eight cups of snacks. Arleen pours $3\frac{1}{3}$ cups pretzels and $2\frac{3}{4}$ cups peanuts into a bowl.



52. What is the maximum number of cups of raisins Arleen can add to 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 #53.

Arleen has made a circular picture frame with a diameter of 40 cm. She wants to glue lace around the outside edge of the frame. Lace costs $0.49/cm.



53. The total cost of the lace before taxes is
A $61.54 **B** $60.80 **C** $30.77 **D** $30.40

Name: _____ Date: _____

Use this information to answer #54 to #57.

Wild Ride Taxi charges $3 as a flat rate plus $2 for every kilometre travelled. To calculate the taxi fare, you can use the relationship $C = 3 + 2k$, where k represents the distance travelled in kilometres and C represents the total cost in dollars.

54. Which table of values matches the relationship $C = 3 + 2k$?

A

k	*C*
0	3
1	4
2	5
3	6

B

k	*C*
1	3
2	5
3	7
4	9

C

k	*C*
0	5
3	9
5	13
7	17

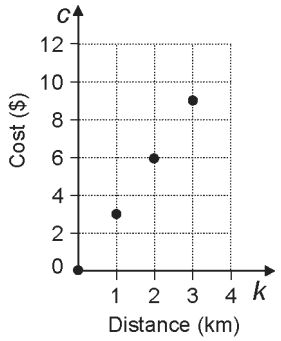
D

k	*C*
0	3
3	9
5	13
7	17

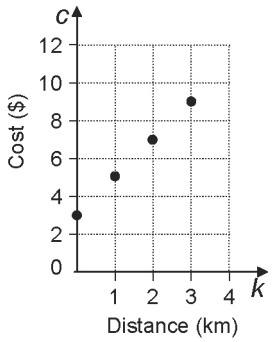
55. In the relationship $C = 3 + 2k$, what is the value 3 called?
A variable **B** numerical coefficient **C** expression **D** constant

56. Which graph shows the linear relation $C = 3 + 2k$?

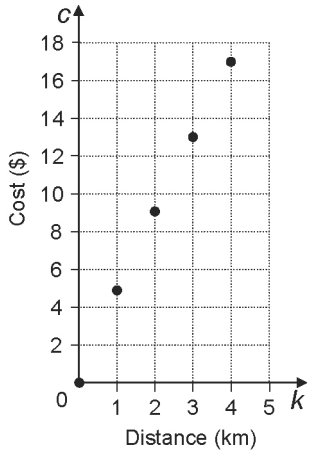
A



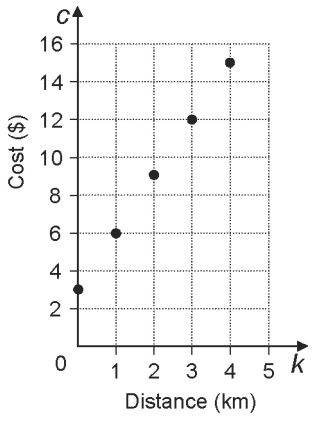
B



C



D

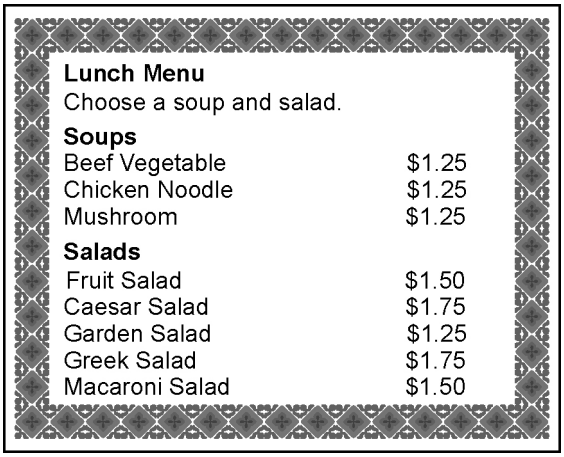


57. If the Kelly family travels 20 km to the restaurant, how much will the taxi fare cost?
A $35 **B** $37 **C** $40 **D** $43

Name: _____ Date: _____

Use this menu to answer #58.

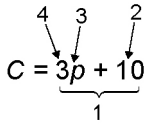
Rob goes to the restaurant daily for lunch. He orders a soup and a salad at random. The menu shows the possible choices.



58. If Rob's lunch is different each day, how long will it take him to try all of the possible combinations?
A 15 days **B** 11 days **C** 8 days **D** 5 days

Use this information to answer #59.

Arleen can calculate the total cost of a banquet using the relationship $C = 3p + 10$, where C represents the total cost and p represents the number of people attending. On the diagram, a number identifies each part of the relationship.



Numerical Response

59. Identify each of the following parts: a numerical coefficient _____, a variable _____, an expression _____, and a constant _____. Record your answer in the order that the numbers appear.

Numerical Response

60. Martin and Arleen determine the profit per person coming for dinner using the relationship $2p + 8 = 40$, where p represents the profit. What is the profit per person?