

# FINAL EXAM

Part B: Multiple Choice  
Part C: Open Questions

Time: 2 hours

# MATHEMATICS GRADE 8

Name: Key

School: \_\_\_\_\_

Mark: \_\_\_\_\_

## JUNE, 2002

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**MATHEMATICS – GRADE 8**

**JUNE, 2002**

**PART B: MULTIPLE CHOICE (60 questions – 60% of exam mark)**

<b>I: Patterns</b>	<b>1 – 12</b>
<b>II: Statistics and Probability</b>	<b>13 – 24</b>
<b>III: Shape and Space</b>	<b>25 - 42</b>
<b>IV: Number</b>	<b>43 – 60</b>

- Calculators are permitted.
- Completely shade the letter of your choice for the answer. Shade carefully. If you must erase, erase completely.

**PART B: MULTIPLE CHOICE** (60 questions – 60% of exam mark)**I: Patterns**

1. Evaluate  $5x - 3y + 3$  by substitution when  $x = 3$  and  $y = 2$ .

A) 4

C) 12

B) 6

D) 2

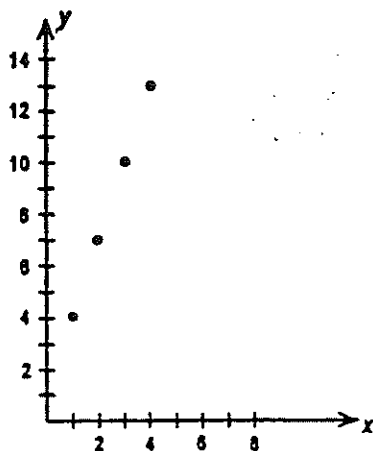
2. Given the graph, which algebraic equation describes the relationship?

A)  $x + 4 = y$

B)  $4x - 2 = y$

C)  $x - 1 = y$

D)  $3x + 1 = y$



3. Marla earns \$50 per week plus \$6.25 per hour. To calculate the amount Marla earned for one month of work, which algebraic expression should she use?

A)  $6.25h + 50$

C)  $6.25 + 50$

B)  $6.25h + 200$

D)  $6.25 \times 50$

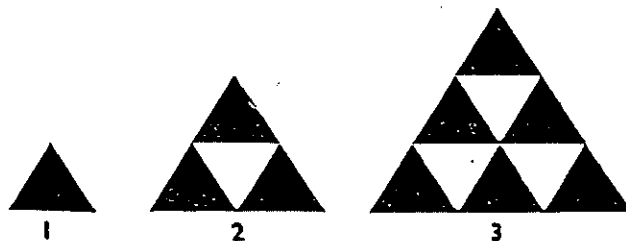
4. The shaded triangles suggest a number pattern. How many shaded triangles will there be in the 6<sup>th</sup> diagram?

A) 20

B) 15

C) 21

D) 18



5. Evaluate  $6y + 3n$ , when  $y = -4$  and  $n = 5$ .

A) 39

C) -9

B) 9

D) -18

6. Choose the correct expression for "the product of seven and a number, decreased by three".

A)  $7 - x - 2$ C)  $7(x - 3)$ B)  $7 \div (x - 3)$ D)  $7x - 3$ 

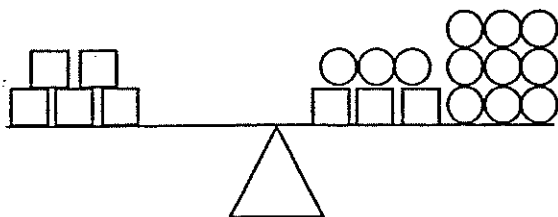
7. What is the value of  $\square$ , given that  $\bigcirc = 1$ ?

A) 6

B) 3

C) 4

D) 4.5



8. Solve the following equation.  $y + 4 = -15$

A) -11

C) 8

B) -19

D) 19

9. Solve:  $6b = -84$

A) -504

C) -12

B) 504

D) -14

10. To solve the equation  $\frac{y}{3} = 12$ , what would you do as your first step?

A) multiply both sides of the equation by 12

B) divide both sides of the equation by 3

C) add 3 to both sides of the equation

D) multiply both sides of the equation by 3

11. Solve the following equation.  $9x - 7 = 29$

A) 4

C) 2.44...

B) 2.4

D) 36

12. Bart solved the equation as follows. Choose the answer which best describes Bart's situation.

	$y + 5 = 20$
	$\frac{y}{3} + 5 = 20$
step 1	$\frac{y}{3} + 5 - 5 = 20 - 5$
	$\frac{y}{3} = 15$
step 2	$\frac{y}{3} = 15$
	$\frac{y}{3} = 15$
step 3	$\frac{y}{3} \div 3 = 15 \div 3$
	$\frac{y}{9} = 5$
step 4	$y = 5$

- A) Bart is correct.  
 B) In step 4, Bart should have added three to both sides of the equation to get the final answer of 18.  
 C) In step 3, Bart should have multiplied by 3 instead of dividing by 3 to get the final answer of 45.  
 D) Bart's final answer should be 15.

## II: Statistics and Probability

13. Mr. Wolf gave a quiz to his Math students. The following is a list of students' scores out of 40. What is the median of the student scores?

34, 25, 38, 36, 33, 31, 36, 37, 29, 28, 22, 38, 30, 40, 26

- A) 31  
 B) 33  
 C) 37  
 D) 36

14. Justin's test results (as percents) are:

71, 48, 67, 83, 54, 72

If the teacher gives Justin five extra marks for each test, what would be the change in Justin's mean score?

- A) It would increase the mean by 35.  
 B) It would have no effect on the mean.  
 C) It would decrease the mean by 1.  
 D) It would increase the mean by 5.

24. A bag filled with Smarties contains 3 blue, 5 pink, 6 red and 10 yellow. What is the probability of choosing a red Smartie on your first attempt?

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

B)  $\frac{6}{12}$

C)  $\frac{1}{4}$

D)  $\frac{3}{4}$

### III: Shape and Space

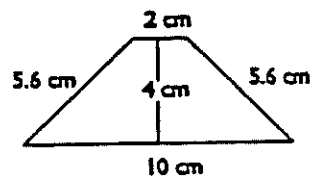
25. The area of this trapezoid is

A)  $24 \text{ cm}^2$

B)  $11.2 \text{ cm}^2$

C)  $12 \text{ cm}^2$

D)  $11 \text{ cm}^2$



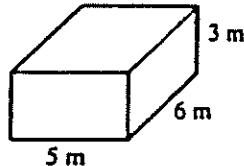
26. The surface area of this prism is

A)  $63 \text{ m}^2$

B)  $126 \text{ m}^2$

C)  $90 \text{ m}^2$

D)  $120 \text{ m}^2$



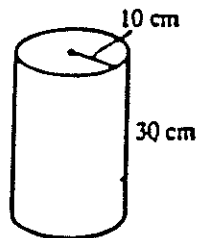
27. The surface area of the cylinder is

A)  $9420 \text{ cm}^2$

B)  $1512 \text{ cm}^2$

C)  $2512 \text{ cm}^2$

D)  $1256 \text{ cm}^2$



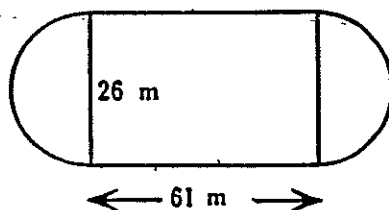
28. Calculate the total surface area of this skating rink (to the nearest  $\text{m}^2$ ).

A)  $1668 \text{ m}^2$

B)  $2286 \text{ m}^2$

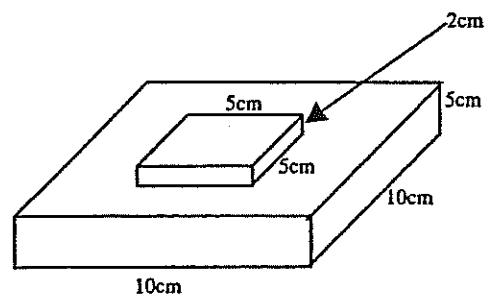
C)  $2093 \text{ m}^2$

D)  $2117 \text{ m}^2$



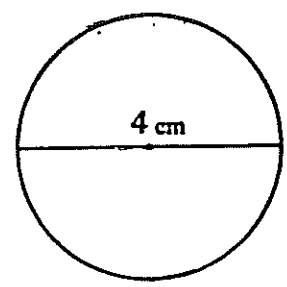
29. Calculate the surface area (exposed area) if the small box sits on the large box and the large box sits on the floor.

- A)  $365 \text{ cm}^2$
- B)  $340 \text{ cm}^2$**
- C)  $325 \text{ cm}^2$
- D)  $375 \text{ cm}^2$



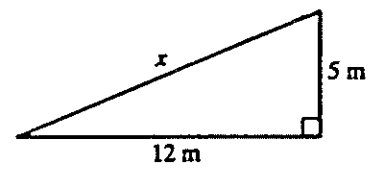
30. Calculate the area of the circle to the nearest tenth.

- A)  $50.2 \text{ cm}^2$
- B)  $6.3 \text{ cm}^2$
- C)  $6 \text{ cm}^2$**
- D)  $12.6 \text{ cm}^2$



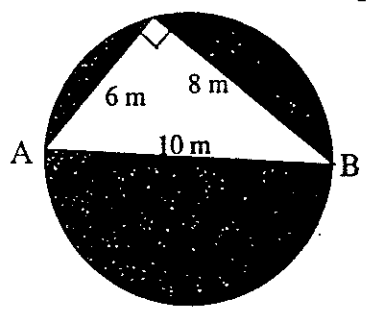
31. What is the length of side x?

- A) 13 m**
- B) 169 m
- C)  $13 \text{ cm}^2$
- D) 30 m



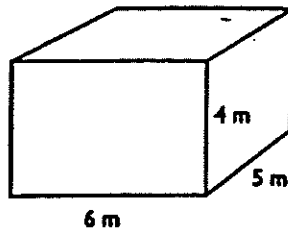
32. Given AB is a diameter, what is the area of the shaded part, to the nearest tenth?

- A)  $78.5 \text{ m}^2$
- B)  $314.0 \text{ m}^2$
- C)  $54.5 \text{ m}^2$**
- D)  $50 \text{ m}^2$



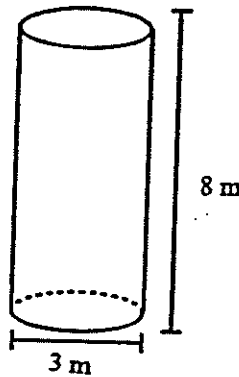
33. The volume of this prism is

- A)  $90 \text{ m}^3$
- B)  $120 \text{ m}^3$**
- C)  $34 \text{ m}^2$
- D)  $120 \text{ m}^2$



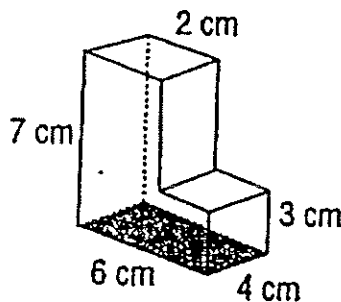
34. The volume of this cylinder is

- A)  $37.68 \text{ m}^2$
- B)  $226.08 \text{ m}^3$
- C)  $32 \text{ m}^2$
- D)  $56.52 \text{ m}^3$**



35. Calculate the volume.

- A)  $104 \text{ cm}^3$**
- B)  $204 \text{ cm}^3$
- C)  $204 \text{ cm}^2$
- D)  $36 \text{ cm}^3$



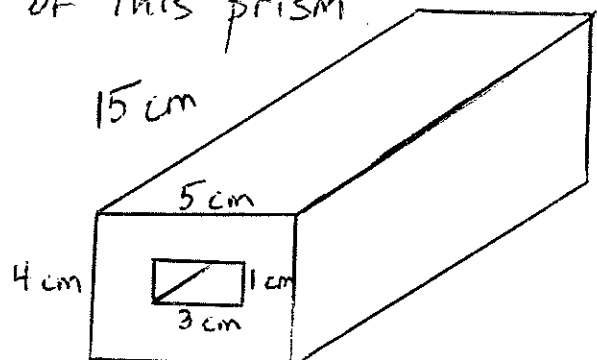
36 Calculate the SURFACE area of this prism

- a)  $442 \text{ cm}^2$
- b)  $436 \text{ cm}^2$
- c)  $430 \text{ cm}^2$
- d)  $424 \text{ cm}^2$**

OUTSIDE  
 L+R 120  
 T+B 150  
 F+B 40  
 -holes 6  
 -----  
 304

Inside  
 T+B = 90  
 L+R 30  
 -----  
 120

424

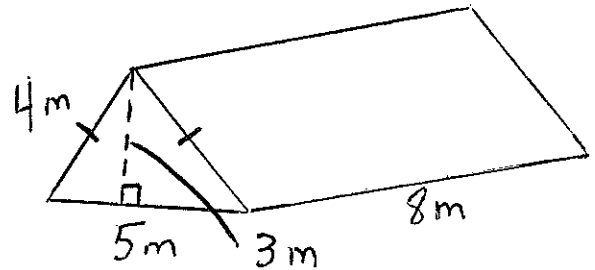




- 37) What are the dimensions of a rectangle that has an area of 36 and a perimeter of 30?
- a)  $6 \times 6$
  - b)  $12 \times 3$
  - c)  $10 \times 3$
  - d)  $6 \times 5$

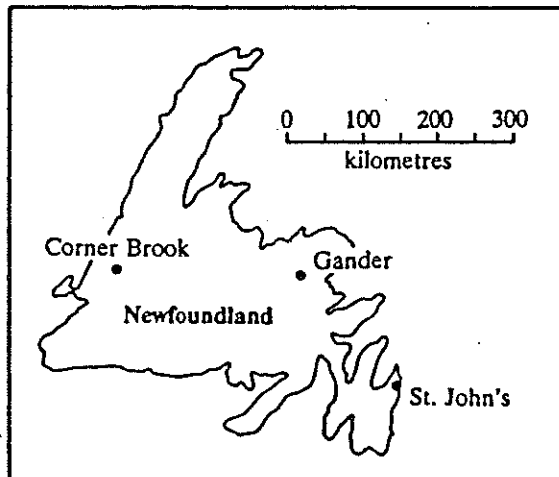
38) What is the surface area of this prism?

- a)  $134 \text{ m}^2$
  - b)  $126 \text{ m}^2$
  - c)  $119 \text{ m}^2$
  - d)  $111 \text{ m}^2$
- #40  
 L+R 64  
 B 40  
 TRI. 15



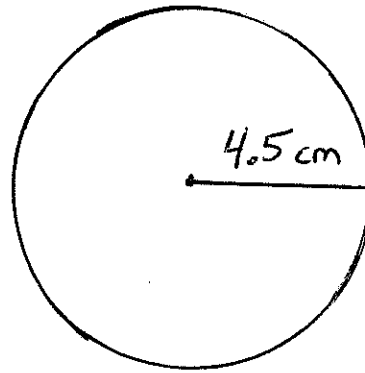
39. What is a reasonable estimate of the distance from Gander to Corner Brook?

- A) 250 km
- B) 250 miles
- C) 2.5 cm
- D) 200 km



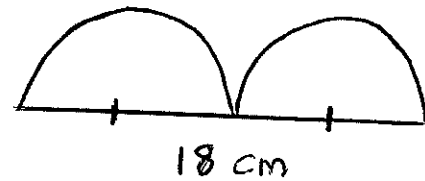
40) What is the circumference of this circle?

- a) 63.6 cm
- b) 254.3 cm
- c) 14.1 cm
- d) 28.3 cm

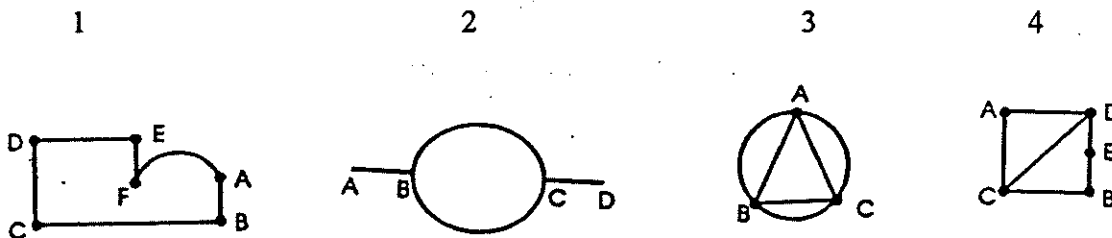


41) What is the perimeter of this figure?

- a) 63.6 cm
- b) 46.3 cm
- c) 28.3 cm
- d) 74.5 cm



42. Which of the networks are traversable?



- A) 1 and 3
- B) 1, 2, 3 and 4
- C) 1, 3 and 4
- D) none

IV: Number

43. Write 784 000 in scientific notation.

- A)  $784 \times 10^3$
- B)  $7.84 \times 10^5$
- C)  $78.4 \times 10^{-4}$
- D)  $7.84 \times 10^3$

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44. Write 0.000 003 8 in scientific notation.

- A)  $38 \times 10^{-7}$   
C)  $3.8 \times 10^{-6}$

- B)  $3.8 \times 10^6$   
D)  $0.38 \times 10^{-5}$
- 

45. The square root of 35 is between which of the following numbers?

- A) 5 and 6  
C) 4 and 5

- B) 25 and 36  
D) 36 and 49
- 

46. By what number would you multiply  $\frac{2}{3}$  by to get a product of 1?

A)  $1\frac{1}{3}$

B)  $\frac{2}{3}$

C) 0.3

D)  $\frac{3}{2}$

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47. The ratio of lemonade to orange juice to Sprite in the punch was 6 : 18 : 12. Express the ratio in its simplest form.

- A) 1 : 3 : 2  
C) 2 : 6 : 4

- B) 1 : 2 : 3  
D) 2 : 3 : 1
- 

48. Write  $5\frac{1}{2}\%$  as a fraction.

A)  $\frac{55}{100}$

B)  $\frac{5.5}{10}$

C)  $\frac{55}{1000}$

D) 0.05

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49. Write 250% as a decimal.

- A) 25.0  
C) 2.50

- B) 0.250  
D) 250.0
-

50. Subtract:  $4\frac{3}{4} - 2\frac{2}{3} =$

A)  $2\frac{1}{7}$

B)  $2\frac{1}{12}$

C)  $7\frac{1}{12}$

D)  $7\frac{5}{12}$

51. Evaluate:  $(-4.5) - 6.2 =$

A)  $-10.7$

B)  $-1.7$

C)  $10.7$

D)  $4.5$

52. Solve:  $(2.3) + (-8.4) =$

A)  $10.7$

B)  $6.1$

C)  $-10.7$

D)  $-6.1$

53. Add  $\frac{4}{5} + \frac{3}{4}$

a)  $\frac{31}{40}$

b)  $\frac{7}{9}$

c)  $\frac{8}{15}$

d)  $1\frac{11}{20}$

54. Divide:  $2\frac{1}{2} \div 1\frac{2}{3}$

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

B)  $4\frac{1}{6}$

C)  $1\frac{5}{7}$

D)  $1\frac{7}{10}$

55. Multiply:  $3\frac{2}{3} \times 1\frac{1}{4}$

A)  $2\frac{14}{15}$

B)  $2\frac{2}{7}$

C)  $4\frac{7}{12}$

D)  $4\frac{11}{12}$

56. Arrange in increasing order.

$$\frac{15}{7} \quad \frac{17}{6} \quad \frac{7}{3} \quad \frac{13}{2}$$

A)  $\frac{15}{7} \quad \frac{17}{6} \quad \frac{7}{3} \quad \frac{13}{2}$

B)  $\frac{13}{2} \quad \frac{17}{6} \quad \frac{7}{3} \quad \frac{15}{7}$

C)  $\frac{15}{7} \quad \frac{17}{6} \quad \frac{7}{3} \quad \frac{13}{2}$

D)  $\frac{15}{7} \quad \frac{7}{3} \quad \frac{17}{6} \quad \frac{13}{2}$

57. Brittany is constructing a  $900 \text{ m}^2$  pool. She wants the shape of the pool to be a square. What will be the length of each side?

A) 225 m

B) 30 m

C) 22.5 m

D)  $30 \text{ m}^2$

58. Express as a unit rate: \$48.75 for 5 hours work.

A) \$243.75 / h

B) \$9.80 / h

C) \$48.75 / 5h

D) \$9.75 / h

59. Chris and Erin have the same ratio of dogs to cats in their kennels. Chris has 4 dogs for every 3 cats. Erin has 49 dogs and cats altogether. How many of Erin's animals are dogs?

A) 64

B) 36

C) 28

D) 4

60. Jeans regularly selling for \$60 were marked down by 25%. To further improve sales, the discount price was reduced by another 15%. What was the final selling price? (no tax)

A) \$45

B) \$36.25

C) \$6.75

D) \$38.25

**PART C: OPEN QUESTIONS** (10 marks - 10% of exam mark)

1. Put the following numbers in order from least to greatest. Show your work by representing your numbers in as many ways as you can. (5 marks)

$$\frac{1}{2}, 75\%, 0.33, \frac{5}{4}, 1.16$$

Example : change all to decimal form

$$\frac{1}{2} = .5$$

$$75\% = .75$$

$$.33$$

$$\frac{5}{4} = 1.25$$

$$1.16$$

Least to greatest .33, .5, .75, 1.16, 1.25

$$0.33, \frac{1}{2}, 75\%, 1.16, \frac{5}{4}$$

2. The following diagram involves several patterns. The side length of the hexagons are 1 cm.

Diagram 1

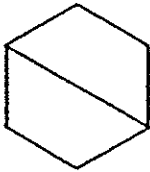


Diagram 2

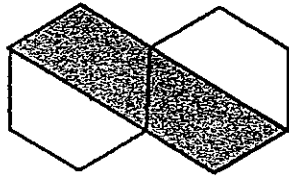
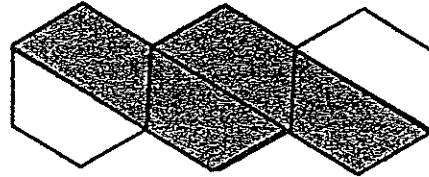


Diagram 3



- a) Describe the pattern in words and how it continues.  
 Each picture has 2 more trapezoids shaded than the previous one

- b) Create a table of values comparing the Diagram # (D) and the # of trapezoids (T).

D	1	2	3
T	0	2	4

- c) What is the algebraic relationship between D and T.

$$T = 2D - 2$$

- d) Use this relationship to calculate how many trapezoids the 14<sup>th</sup> diagram has.

$$T = 2 \times 14 - 2 = 26$$

- e) Graph your table of values on the graph paper provided. Verify your answer of d) on the graph.

# Trapezoid Pattern

