

East Selkirk Middle School

Grade 8 Mathematics Exam

June 19, 2009

Student Response Booklet

Materials:

You will require the following materials:

- Calculator
- Ruler
- Pencil with eraser

Points To Remember

The total time allowed for writing this test is 120 minutes or 2 hours

- Work alone on this test
- You may use a calculator on any part of this test.
- Notes, notebooks or textbooks may not be used during the test.
- You may use blank scrap paper but it must be handed in at the end of the test. You may do rough work in this booklet.
- If you need more space to answer a question, you may use an extra page provided by your teacher. Write your name and the question number on any extra page used. Staple all pages into your booklet where your answer begins.

Description

Your grade 8 final exam consists of 3 parts:

Part	Description	Suggested Time	Marks
1	Multiple Choice	30	36
2	Constructed Response	60	46
3	Problems	30	18

Directions

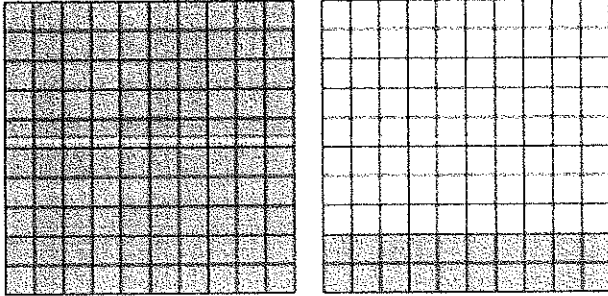
Part 1 : Multiple Choice – Read each question carefully. Choose the best response and mark it on the **Answer Sheet** by shading in the letter of the appropriate bubble with your pencil.

Part 2 : Constructed Response – Provide complete, well-organized answers showing all your thinking. Remember to write neatly.

Part 3 : Problems - Same as part 2. Show all work !

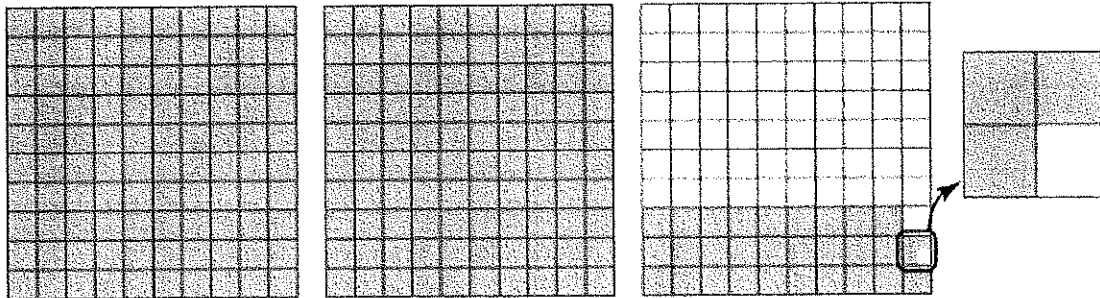
Part 1 : Multiple Choice Questions

1) One completely shaded grid represents 100%. What percent does this diagram represent?



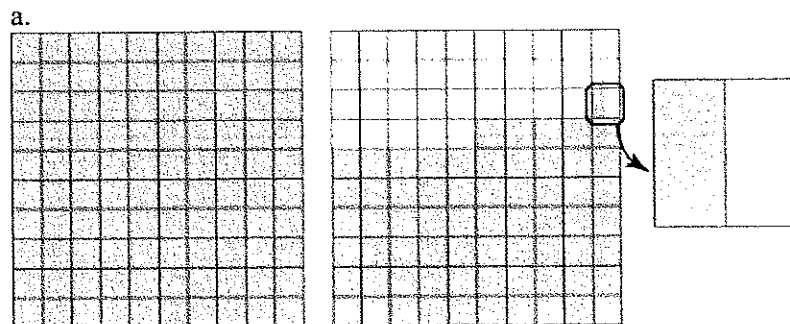
- a. 80% c. 110%
 b. 90% d. 120%

2) What percent is represented by this diagram if a completely shaded grid represents 100%?

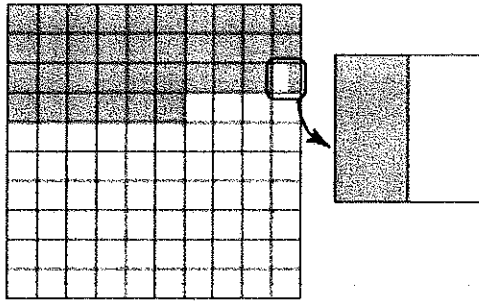


- a. $228\frac{3}{4}\%$ c. $156\frac{3}{4}\%$
 b. $171\frac{1}{4}\%$ d. $128\frac{3}{4}\%$

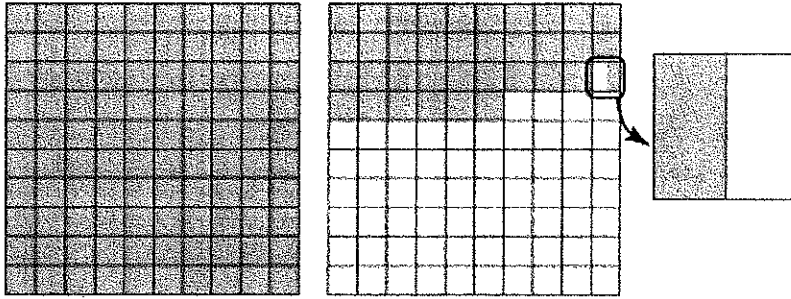
3) One completely shaded grid represents 100%. Which diagram represents $135\frac{1}{2}\%$?



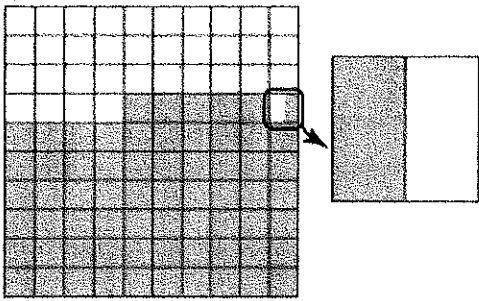
b.



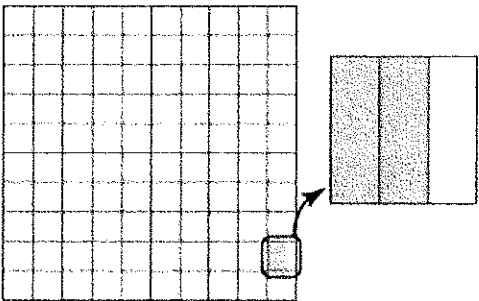
c.



d.



4) One completely shaded grid represents 100%. What percent does this diagram represent?



a. $\frac{2}{3}\%$

c. $66\frac{2}{3}\%$

b. $\frac{1}{3}\%$

d. $33\frac{1}{3}\%$

5) Which percent can be written as 0.65?

- a. 0.65% c. 65%
b. 6.5% d. 650%

6) Jake scored these marks on four tests: 0.75, $\frac{4}{5}$, 0.85, and $\frac{18}{20}$. Which is the highest test mark?

- a. 0.75 c. 0.85
b. $\frac{4}{5}$ d. $\frac{18}{20}$

7) In a recent survey, 300 students were asked about the type of pets they own. The results showed that 131 students own dogs, 71 students own cats, 7 students own goldfish, and the rest do not own pets. What percent of students do not own pets?

- a. $79\frac{8}{9}\%$ c. $30\frac{1}{3}\%$
b. $69\frac{2}{3}\%$ d. $20\frac{1}{9}\%$

8) Yuri ate 20% of a bag of pretzels. How much of the bag is left if its original mass was 400 g?

- a. 180 g c. 380 g
b. 320 g d. 800 g

9) Determine the value of x if $\frac{x}{48} = \frac{7}{3}$.

- a. 16 b. 32 c. 80 d. 112

10) A stable has 39 horses available for trail rides. Of these horses, 26 are all brown, 8 are mainly white, and the rest are black. Express in lowest terms the ratio of brown horses to mainly white horses to black horses.

- a. 13:4:2 b. 13:4:5 c. 26:8:5 d. 39:26:8

11) Sandra works at a carwash and makes \$8.75/h. After working 5.5 h, Sandra will make

- a. \$48.13 b. \$35.00 c. \$43.75 d. \$57.50

12) Sam borrowed \$240 from his friend Brian. Sam agreed to pay Brian 8% interest per year. How much would Sam need to repay Brian after 18 months?

- a. \$28.80 b. \$211.20 c. \$259.20 d. \$268.80

13) The grocery store sells ketchup in different sizes of bottles: 375 mL for \$2.99, 500 mL for \$3.79, 1 L for \$3.99, and 1.5 L for \$5.49. Which size is the best buy?

- a. 375 mL b. 500 mL c. 1 L d. 1.5 L

14) Taye wants to buy a personal DVD player that costs \$249.00. How much money will Taye need to pay for the DVD player if the GST is 5% and PST is 7%?

- a. \$29.88 b. \$32.37 c. \$278.88 d. \$281.37

15) A 4-litre jug of milk is priced at \$4.15. Determine the unit price.

- a. \$0.42 per L b. \$1.04 per L c. \$2.08 per L d. \$4.15 per L

16) Determine $3 \times \frac{5}{18}$, in lowest terms.

- a. $\frac{5}{6}$ b. $\frac{5}{9}$ c. $\frac{5}{18}$ d. $\frac{5}{54}$

17) Calculate $12 \div \frac{3}{4}$.

- a. $\frac{1}{16}$ b. $\frac{1}{9}$ c. 9 d. 16

18) As an improper fraction in lowest terms, what is $\frac{2}{5} \times \left(\frac{2}{3} + \frac{3}{10} \right) \div \frac{8}{15}$?

- a. $\frac{23}{25}$ b. $\frac{11}{15}$ c. $\frac{29}{40}$ d. $\frac{15}{52}$

19) Calculate $5\frac{2}{3} \times \frac{1}{4}$.

- a. $5\frac{1}{6}$ b. $1\frac{5}{12}$ c. $\frac{5}{6}$ d. $\frac{1}{30}$

20) Divide $5\frac{1}{5} \div 1\frac{3}{20}$.

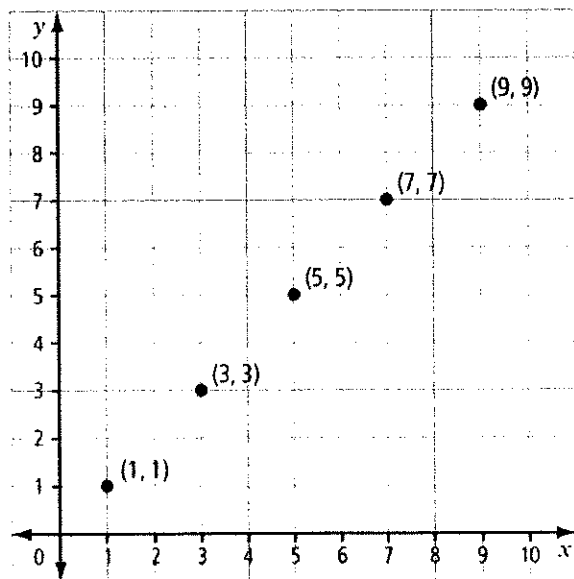
- a. $1\frac{4}{15}$ b. $3\frac{1}{5}$ c. $4\frac{12}{23}$ d. $6\frac{2}{3}$

21) Jonathan spends \$45 on clothes and entertainment each month. He spends $\frac{2}{3}$ of this on his clothes.

How much does he spend on clothes each month?

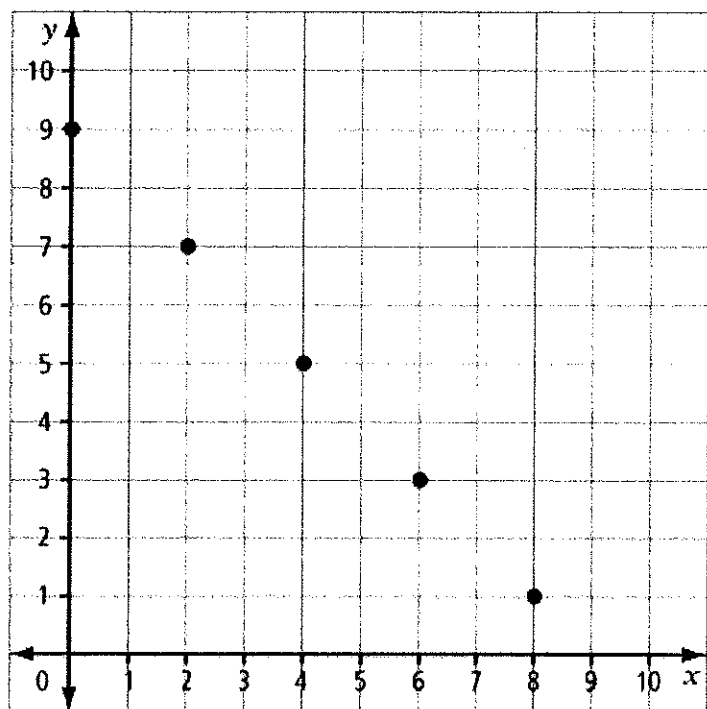
- a. \$15 b. \$30 c. \$45 d. \$68

22) Which statement best describes the pattern of this graph?



- a. To move from one point to the next, you go two units horizontally and three units vertically.
b. To move from one point to the next, you go two units horizontally and two units vertically.
c. To move from one point to the next, you go three units horizontally and three units vertically.
d. To move from one point to the next, you go three units horizontally and two units vertically.

23) Which table of values represents this graph?



a.

x	y
9	0
7	2
5	4
3	6
1	8

c.

x	y
0	-9
2	-7
4	-5
6	-3
8	-1

b.

x	y
0	9
2	7
4	5
6	3
8	1

d.

x	y
-9	0
-7	2
-5	4
-3	6
-1	8

24) Which of the following tables of values represents a linear relationship?

a.

x	y
-1	-1
1	3
3	7
5	11
7	15

c.

x	y
-1	-1
1	0
3	3
5	8
7	15

b.

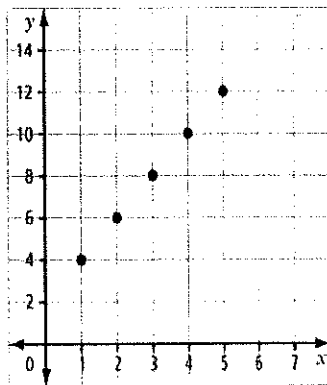
x	y
-1	1
1	1
3	9
5	25
7	49

d.

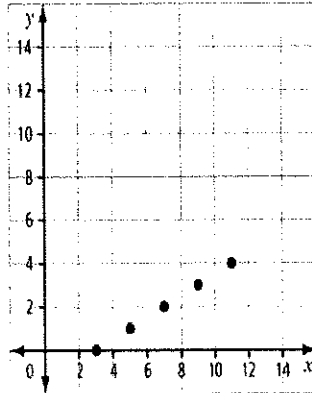
x	y
-1	-1
1	5
3	11
5	17
7	14

25) Which graph is best represented by the linear relation $y = 2x + 3$?

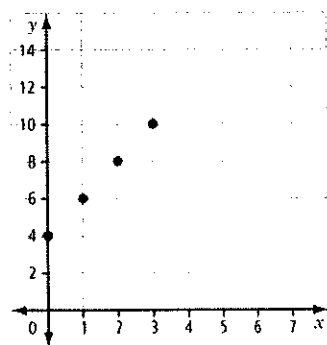
a.



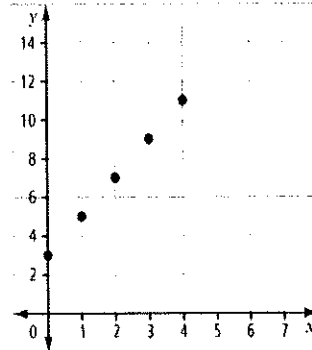
c.



b.



d.



26) Which equation represents the statement "five less than twice a number is eleven"?

- a. $5 - 2n = 11$ c. $11(n - 2) = 5$
b. $2n - 5 = 11$ d. $5n - 2 = 11$

27) Solve the equation $12y + 20 = 44$.

- a. $y = 2$ c. $y = 20$
b. $y = 12$ d. $y = 24$

28) Jennie is selling her CD player and 14 CDs. She is selling the CD player and the CDs for \$332.00 altogether. If the CD player costs \$150, what is the value of each CD?

- a. \$13 c. \$15
b. \$14 d. \$17

29) Solve $-5(x + 5) = -25$.

- a. 0 c. -5
b. -1 d. -25

30) Which number is a perfect square?

- a. 5 c. 9
b. 7 d. 11

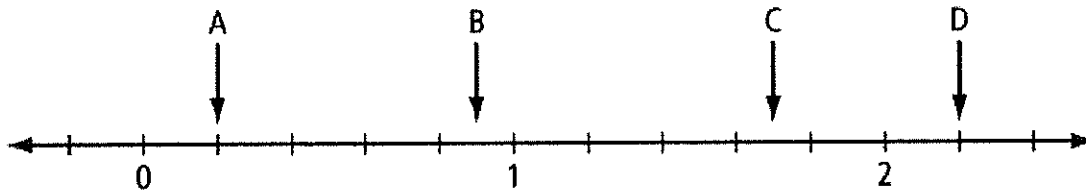
31) What is the prime factorization of 78?

- a. $2 \times 2 \times 2 \times 3 \times 3$ c. $2 \times 6 \times 6$
b. $2 \times 3 \times 13$ d. 6×13

32) A square has an area of 196 cm^2 . How long is each side of the square?

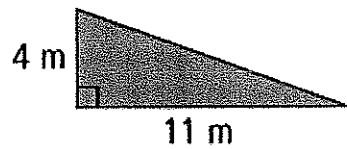
- a. 7 cm c. 98 cm
b. 14 cm d. 196 cm

33) Where on this number line is the approximate value of $\sqrt{3}$ located?



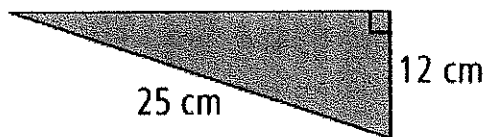
- a. A
- b. B
- c. C
- d. D

34) The length of the hypotenuse, to the nearest tenth of a centimetre, is



- a. 10.2 cm
- b. 10.6 cm
- c. 11.0 cm
- d. 11.7 cm

35) The length of the missing side is



- a. 21.9 cm
- b. 24.9 cm
- c. 27.7 cm
- d. 37.0 cm

36) The hypotenuse of a right triangle is 20 cm. One leg of the triangle is 7 cm. How long must the other leg be?

- a. 13 cm
- b. 18.7 cm
- c. 21.2 cm
- d. 27 cm

Part 2 : Constructed Response Questions

1. a) Solve for x in each equation. Show your work.

$$\frac{x}{5} + 2 = 8$$

$$-7x - 8 = 62$$

3 marks

- b) Does x have the same value in both of these equations? Justify your answer.

-
2. To go to a concert, a group of five Grade 8 students rented a limousine. The limousine collects \$2.50 per kilometer of distance traveled and a flat fee of \$50.00.

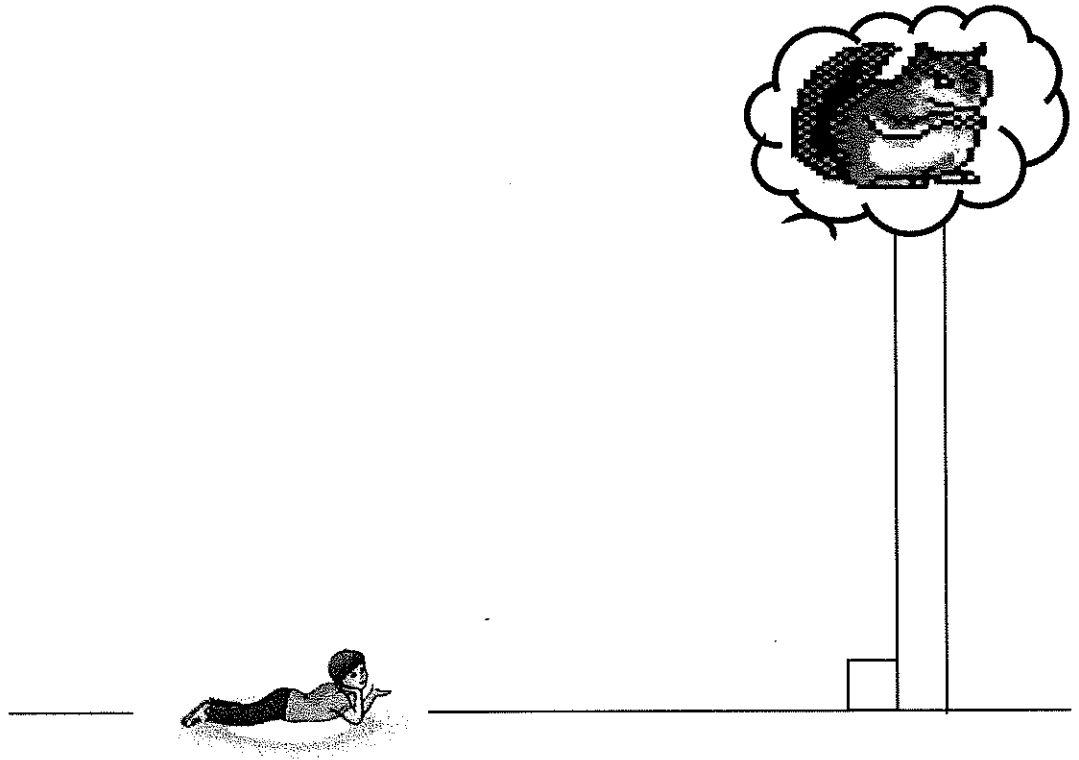
- a) Using a variable, write an equation to calculate the cost of a trip.
- b) If the limousine driver charged you \$95.00, how far did you travel? Please show your work.

5 marks

- c) Each student has \$20.00. It is 25 kilometers to the concert. Do they have enough money to travel this full distance to the concert? Calculate the amount you are short or how much change you should get back. Please show your work.

3. Nutty the squirrel is in a tree and is throwing acorns at you. You are lying down **8 m** from the base of the tree. The acorns travel a **diagonal** distance of **14 m** from the squirrel to you. How high up in the tree is the squirrel? Please show your work and include proper units. Note that the diagram is not to scale.

2 marks



-
4. Estimate $\sqrt{96}$ (to the nearest tenth) and show your thinking.

2 marks

-
5. Place the following numbers on the number line:

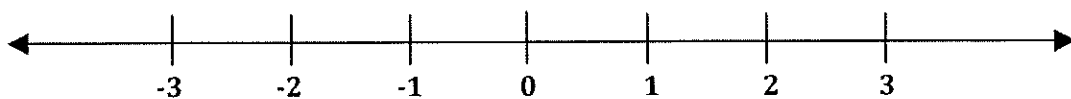
A (-2.7)

B ($1\frac{2}{3}$)

C ($-\frac{7}{8}$)

D (2.2)

2 marks



6. Solve for X and Y.

$$X : 12 : 20 = 20 : 60 : Y$$

X = _____

2 marks

Y = _____

7. In 2003 Nutty the squirrel collected 950 acorns. He predicts that he will collect 60% **more** acorns this year. Please show your work.

a) If his prediction is correct, how many acorns will he collect in 2004?

3 marks

b) If the increase in 2004 is 125% instead of 60%, how many acorns in total would Nutty collect?

8. The regular price of jeans is \$39.99. They're on sale for 30% off.

Based on the sale price, calculate the total cost of the jeans, including GST (5 %) and PST (7 %). Please show your work and include proper units.

2 marks

9. A box of 24 donuts costs \$9.99. A box of 60 donuts costs \$22.99.

Determine and indicate the better buy by calculating the unit price (per donut) for each box. Please show your work and include proper units.

3 marks

10. Three fifths ($\frac{3}{5}$) of the students buy hot dogs on hot dog day. There are 375 students in the school.

How many students buy hot dogs on hot dog day? Show your calculations.

2 marks

11. Add the following fractions. Write your answer in lowest terms. Show all work.

2 marks

$$\frac{3}{4} + \frac{5}{6}$$

12. Subtract the fractions. Write your answer in lowest terms. Show all work.

2 marks

$$4 \frac{2}{3} - 1 \frac{1}{5}$$

13. Subtract the fractions. Write your answer in lowest terms. Show all work.

2 marks

$$6 \frac{1}{2} - 1 \frac{5}{6}$$

14. Add the following integers.

a) $(-3) + (-7) =$ _____

2 marks

b) $(+8) + (-14) =$ _____

15. Subtract the following integers.

a) $(-4) - (-8) =$ _____

2 marks

b) $(+12) - (-3) =$ _____

16. Calculate using the order of operations.

1 mark

$5 + (-9) \times 4 \div (-1) =$ _____

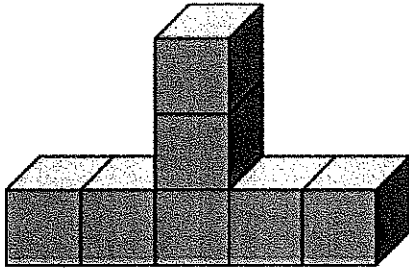
17. A freezer is at room temperature of 20 degrees Celsius. When it is turned on, the temperature inside drops by 3 degrees per hour. How long does it take the freezer to reach -16 degrees Celsius? Show your thinking.

2 marks

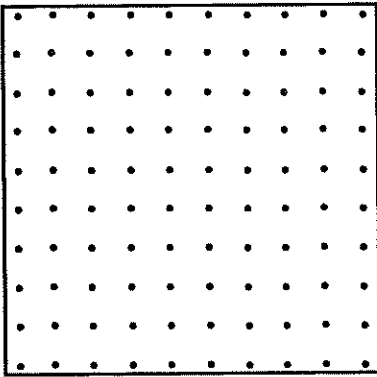
18. The gym teacher told the students to run around the perimeter of the school field 4 times. The area of the square field is $28\,900\text{ m}^2$. Calculate the distance that the students ran. Show all work.

2 marks

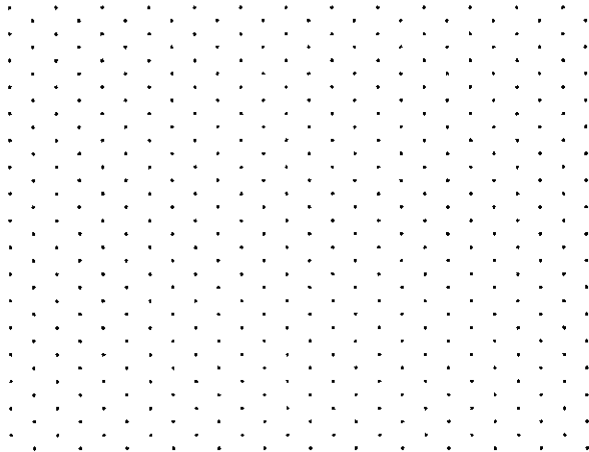
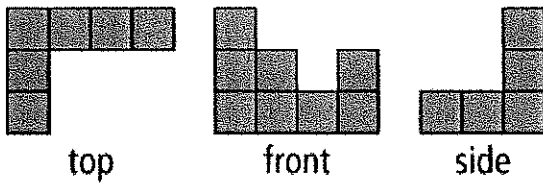
19. Draw the front, top, and right side view for this 3-D object. You may use cubes to help you.



3 marks



20. Draw the 3-D object described by the three views provided below. Remember to label the front.

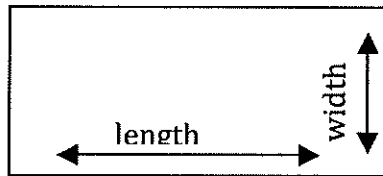


2 marks

Part 3 PROBLEMS (Patterns and Relations) _____ 10 marks

A restaurant manager has rectangular tables that seat 2 people along each width and 3 people along each length.

1. Make a sketch showing where people would sit at one table below:



2. The manager wants to join tables together in order to seat the maximum number of people. He's not sure if he should join them **length to length** or **width to width**.

- a) Make a sketch showing where people would sit at 2 tables joined **width to width** (short side).

- b) Complete the table of values showing the relationship between number of tables and number of chairs if he joins them **width to width**.

Table of Values:

Number of tables	1	2	3	4	5
Number of chairs					

- c) Write an equation that relates the number of chairs to the number of tables, if the tables are joined **width to width**.

d) Make a sketch showing where people would sit for 2 tables joined **length to length** (long side).

e) Complete the table of values showing the relationship between number of tables and number of chairs if he joins them **length to length**.

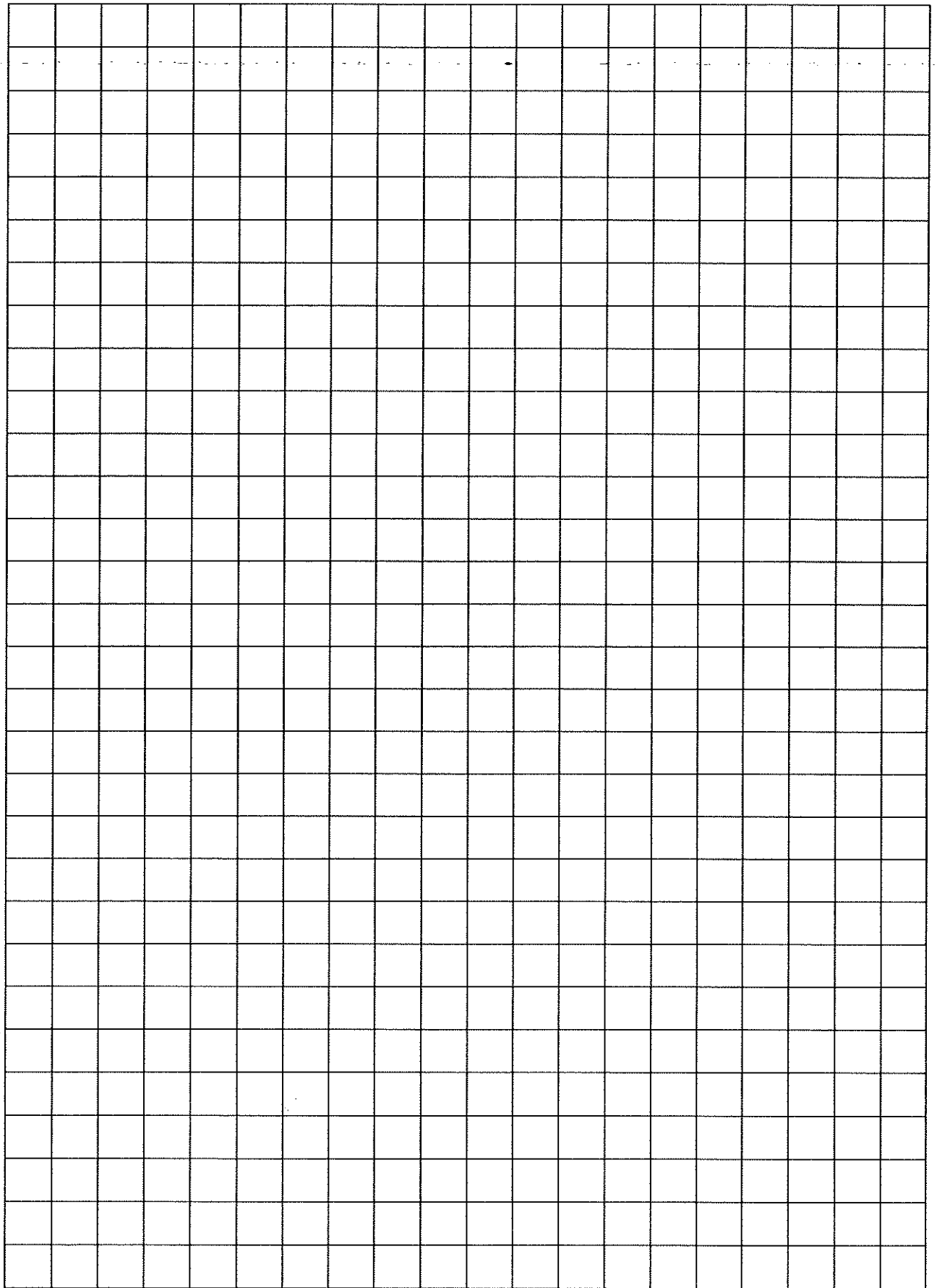
Table of Values:

Number of tables	1	2	3	4	5
Number of chairs					

f) Write an equation that relates the number of chairs to the number of tables, if the tables are joined **length to length**.

3. Which arrangement will seat the most number of people? Justify your answer.

4. Use the graph paper on the next page to create a **labeled** graph representing the table of values for the seating arrangement that seats the most people.



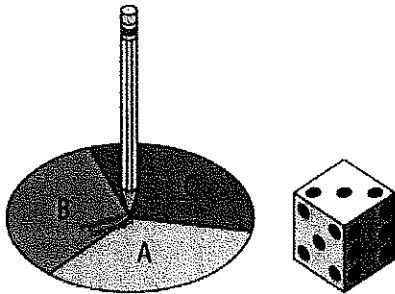
5. The restaurant manager is having a party and wants to seat the most people possible. Using your equation, calculate the maximum number of people that can be seated at 10 tables joined together.

6. Verify your answer by plotting this point on your graph.

Part 3 : PROBLEMS (Probability)

_____ / 8 marks

1) Pedro spins the spinner below and rolls a standard die.



a) Calculate the $P. (A,2)$ using a tree diagram.

b) Calculate the $P. (B, \text{odd number})$ using multiplication of fractions.

2) A bag contains 3 red marbles and 2 black marbles. A second bag contains 2 pennies and 4 dimes. Vinny will select one item from each bag without looking.

a) Calculate the P. (Red, Penny) using a table. Write it in lowest terms.

b) Calculate the P. (Black, Dime) using multiplication of fractions. Write it in lowest terms.

This is the End of the ESMS Grade 8 Math Exam