

NAME \_\_\_\_\_

- Notes: 1. A formula sheet is provided. Non-programmable, non-graphing calculators are permitted.  
 2. Answer all questions on the exam paper.  
 3. Communication will be evaluated throughout the exam based on the rubric below.

MARKKS: Knowledge/Understanding \_\_\_\_\_/33 Application \_\_\_\_\_/34 Communication \_\_\_\_\_/20  
level

**PART A:****Multiple Choice.**

Write the letter of the best answer on the space at the right. 1 K/U mark ea.

1.  $5\frac{1}{3} \times \frac{3}{4} =$

- a)  $5\frac{1}{4}$       b)  $5\frac{1}{12}$       c) 4      d)  $5\frac{3}{7}$

2.  $\frac{7.8}{0.012}$  is closest to

- a) 6      b) 60      c) 600      d) 6000

3.  $\frac{b^6}{b^3} =$

- a) 3      b) 2      c)  $b^2$       d)  $b^3$

4.  $(x-3)(x-5) =$

- a)  $x^2 - 15$       b)  $x^2 + 15$       c)  $x^2 + 8x - 15$       d)  $x^2 - 8x + 15$

5. Solve for x.  $16x = 220 + 5x$

- a) 20      b)  $\frac{11}{5}$       c)  $\frac{220}{21}$       d)  $\frac{220}{21}$

6. Solve for a:  $(a+6)(a-7) = 0$

- a) 6, 7      b) -6      c) 7      d) -6, 7

7. For the parabola  $y^2 = -2(x+1)^2 - 3$ , the vertex is

- a) (-2, -3)      b) (1, 3)      c) (-1, -3)      d) (-1, 3)

8. If  $\tan A = 0.75$ , then angle A measures, in degrees,

- a) 36      b) 37      c) 0.64      d) 49

9. A relation is defined by the equation  $y = 10 + 2.5x$ . The slope is

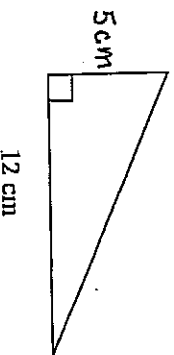
- a) 10      b) 2.5      c) 12.5      d) 25

10. What is the total surface area of a cylinder with a radius of 3 cm and a height of 7 cm?

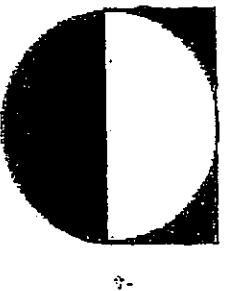
- a)  $131.9 \text{ cm}^2$       b)  $160.2 \text{ cm}^2$       c)  $188.5 \text{ cm}^2$       d)  $122.6 \text{ cm}^2$       e)  $66 \text{ cm}^2$

**PART B: Write full solutions in the space between the questions.**

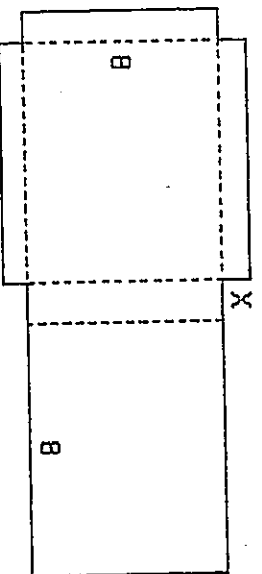
1. Find the perimeter of the triangle. [3K]



2. In the figure, each semi-circle has a radius of 6 units. What is the area of the shaded portion? [3A]



3. The piece of cardboard in the figure can be folded as shown into a box with a volume of 96 cubic inches. What is the missing dimension  $X$ ? [2A]



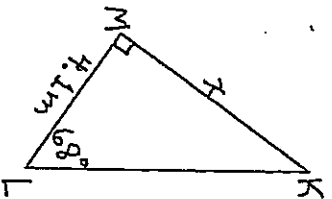
4. A storage building with a semi-circular front is 20 feet wide and 36 feet long. What is its interior volume? [3A]



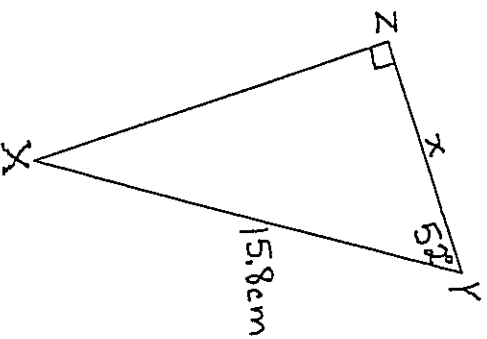
5. If a 25-foot ladder reaches 21 feet up the side of a building, what is the angle of elevation of the ladder? [3A]

6. Determine the length of each side  $x$ . [7K]

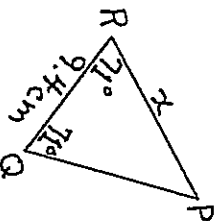
a)



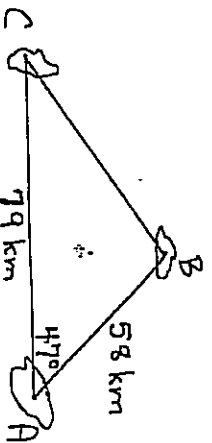
b)



c)



7. The islands of Aura, Bura, and Cura have beautiful beaches and year-round warm weather. A brochure issued to tourists on the island of Aura states that Bura is 58 km from Aura while Cura is 79 km from Aura. The angle between the two routes is  $47^\circ$ . Help a tourist who loves island-hopping to calculate the distance from Bura to Cura. [3A]



8. Solve each system of equations algebraically. [6K]

a)  $y = x + 4$

$y = -2x + 1$

b)  $x + 3y = 3$

$2x - y = -8$

9. A company sold 5 standard air conditioning units and 4 deluxe units for \$39 000. The next month, the company sold 4 standard and 2 deluxe units for \$24 000. How much does each unit sell for? [3A]

10. Factor. [5K]

a)  $x^2 + 6x + 8$

b)  $81x^2 - 144$

11. Identify the independent variable in each scenario and state whether the variables are positively correlated, negatively correlated or not correlated. [4K]

a) The temperature of a cup of hot cocoa during time sitting outside

Independent variable \_\_\_\_\_ type of correlation \_\_\_\_\_

b) The total rental cost of graduation gowns for a graduating class

Independent variable \_\_\_\_\_ type of correlation \_\_\_\_\_

12. Sara polled her class to find out how much each person spent, in dollars, on fast food last month. Here are the data she collected.

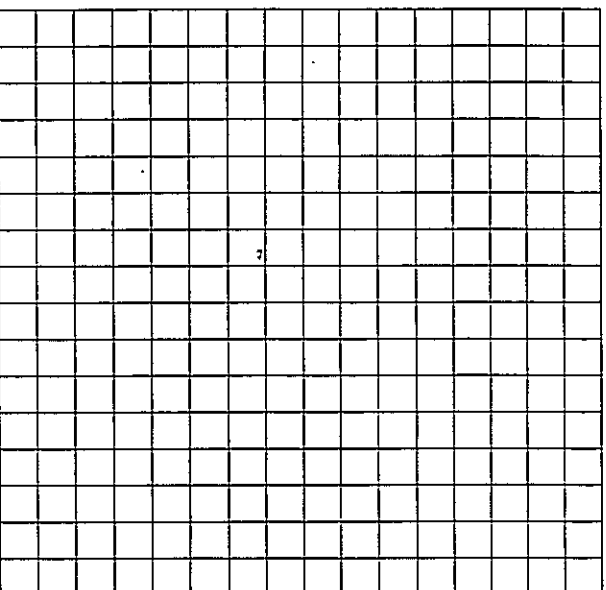
0, 12, 15, 23, 35, 35, 38, 52, 54, 58, 42, 45, 41, 48, 44, 68, 0

Find the mean, median, and mode(s). [4A]

13. The following data gathered by B. Hitchman show the year and the exchange rate on January 1 each year from 1996 to 2004. [6A]

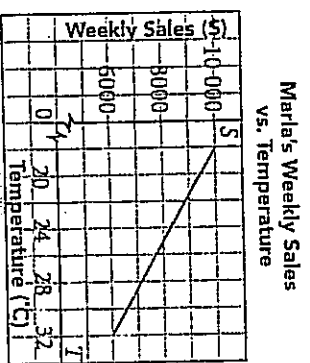
Date	1996	1997	1998	1999	2000	2001	2002	2003	2004
\$US in \$Cdn	\$1.37	1.35	1.44	1.52	1.45	1.5	1.62	1.49	1.295

- a) Draw a scatter plot of the year versus the exchange rate. Draw a line of best fit.  
 b) Would you use your line of best fit to predict the exchange rate in 2010? Why or why not?



14. There are 30 students in a math class. Assuming a normal distribution of the marks, calculate the number of students who were within one standard deviation of the mean. [2A]

15. Marla owns a café. She has discovered that her weekly sales depend on the outside temperature, as shown in the graph. [5A]



- a) Determine the slope of the graph. \_\_\_\_\_
- b) Write the equation relating the weekly sales to outside temperature.
- c) Predict Marla's weekly sales when the outside temperature is 35 degrees.