PICTON HIGH SCHOOL

Creating Opportunities Achieving Success

YEAR 12 General 1 Mathematics

Sighted Exam

Due Date: Friday 2nd March 2018 Term 1 Week 5, Period One	**Assessment Name:** Sighted Exam
Mark: /41	**Weighting: 3**0 **%**

SYLLABUS OUTCOMES TO BE ASSESSED:

MG1H – 2 **analyses** representations of data in order to make **predictions**

MG1H - 3 makes **predictions** about everyday situations based on simple mathematical models

MG1H – 4 **analyses** simple two-dimensional and three--dimensional models to solve practical problems

MG1H – 5 interprets the results of measurements and calculations and makes judgements about reasonableness, including the conversion to appropriate units

MG1H – 7 **develops** and carries out simple statistical processes to answer questions posed

MG1H - 10 **uses** mathematical argument and reasoning to evaluate conclusions drawn from other sources, communicating a position clearly to others

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DIRECTIVES TO BE ASSESSED:

Analyse: To identify causes, key factors, relationships and possible results.

Predict: To make an educated guess about future events.

Interpret: To draw meaning from a mathematical situation.

Develop: To elaborate, become more complex or intricate; add detail to show in-depth understanding of mathematical concepts.

Use: To manipulate something for a particular purpose to solve mathematical problems.

TASK DESCRIPTION:

You have been given a number of questions from which a **ONE** period examination will be created.

The examination will include FIVE multiple choice questions and THREE short answer, free response questions each worth 12 marks.

You will be required to prepare for this examination by completing the attached questions as a form of study/revision. The examination questions will be taken from the attached questions.

The examination questions will require you to **ANALYSE** data and make **PREDICTIONS** where all working out is to be shown. You will also be required to **INTERPRET** measurements and calculations to solve practical problems with two-dimensional and three-dimensional models.

You will need to **DEVELOP** and **USE** the correct method to solve the questions.

A Board approved formulae sheet will be provided with your examination paper and will also be attached to the SAMPLE QUESTIONS, so that you become familiar with its format.

You will be assessed on your knowledge and application of the course content below:
- Algebraic Skills (Chapter 2)
- Analysing sets of data (Chapter 4)
- Applications of area and volume (Chapter 5)
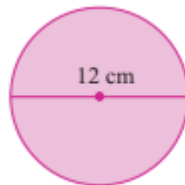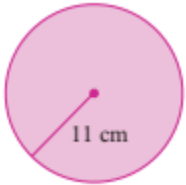
Required Equipment
- Board Approved Scientific Calculator
- Black Pen

Note: Some of the following questions may be used as Multiple Choice questions.

Use your calculator to find the area of each circle, giving the answers correct to 1 decimal place.
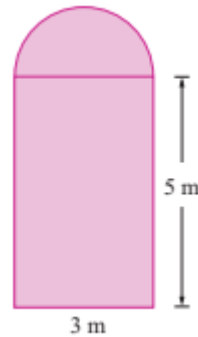
11 cm

12 cm

Use your calculator to find the area of each shape, giving the answers correct to 2 decimal places.

8.3 cm

120°

7.8 cm

7.4 cm

6.3 cm
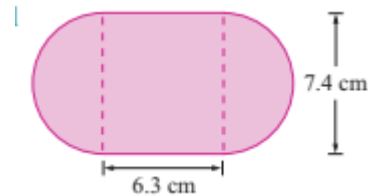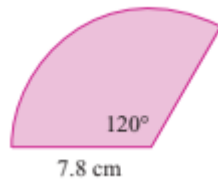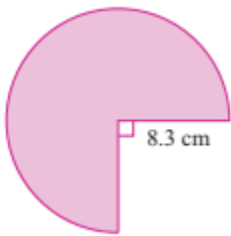
The diagram on the right shows a stained glass window in a church.

a Calculate the area of the window correct to 2 decimal places.

b The cost of replacing the glass is \$540/m², or part thereof. Calculate the cost of replacing this glass.
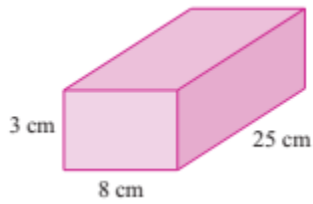
5 m

3 m

A 3 m wide path is placed around a circular pond that has a diameter of 6 m. Find the area of the path correct to 1 decimal place.

3 m

6 m
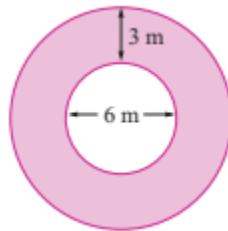
A diagram is shown of an irregular field. Use Simpson's rule to approximate the area of the fields.

16

5

14

18   18

130

210

120

110   110   110   110
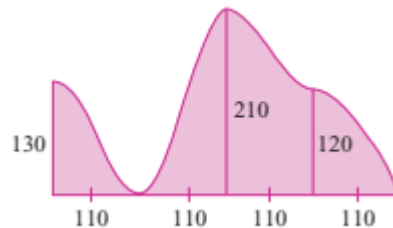
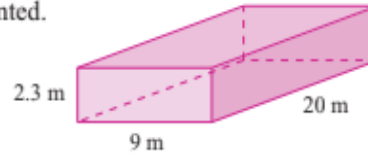Calculate the volume and surface area of this prism.

3 cm
25 cm
8 cm

A gift box measures 10 cm by 12cm by 20 cm.
   a) Draw a diagram of the gift box and label the dimensions.
   b) Calculate its total surface area.
   c) Gift wrapping costs $3.50 a sheet. If each sheet covers 290 cm squared, calculate the total cost of wrapping the gift box. (you must purchase complete sheets)

The interior walls and floor of an in-ground swimming pool are to be repainted.
a Calculate the total surface area of the four walls and floor of the pool.
b How many cans of paint are needed if one can covers 70 m²?
c What is the cost of repainting, if each can costs $82.50?

2.3 m
20 m
9 m

Calculate the volume and surface area of this cylinder.

12 cm
14 cm
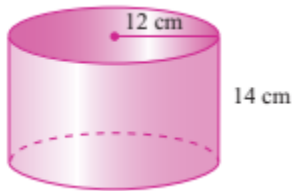
a A cylindrical tank is 40 m high and 20 m in diameter. Find the surface area of the closed tank.
b If paint covers 8 m²/L, find the number of 10 L cans of paint needed to paint the outside of the tank with one coat.
c Paint costs $115.20 per 10 L can. Find the cost of paint for the tank.

7 cm
A = 22 cm²

7 cm
7 cm

7 cm
18 cm
10 cm
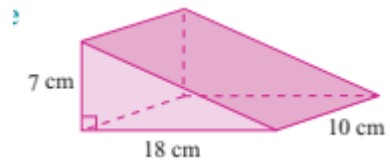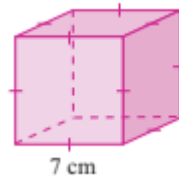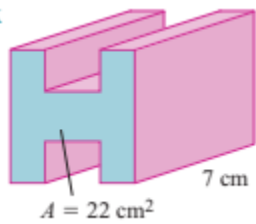
Calculate the volume of these prisms.

Simplify the following by collection like terms.

$-8l - 4 + 2l - 7$

$ab + b - 2ab - 5b$ $2a + 4b + 4a - 2b$

$3a - 2 - a + 2 - a$ $x^2 + 2x + 3 - 5x$

$4p^5 + 5p^4 - 2p^5 - 6p^4$ $-5a - 3a + 3 - 5$

Simplify the following.

$25y \div 5$ $\dfrac{3x}{5} \times \dfrac{2n}{7}$ $\dfrac{4x}{3} \div \dfrac{7x}{2}$

$8a \div 2a$ $\dfrac{8m}{5} \times \dfrac{15n}{16}$ $\dfrac{18xy}{7} \div \dfrac{6x}{14}$

$\dfrac{20xy}{10x}$ $\dfrac{7}{2p} \times \dfrac{3p}{14}$

$\dfrac{-20mn}{-4m}$ $\dfrac{6xy}{5} \times \dfrac{25}{3y}$

Expand and simplify.

$2(x + 3)$ $-4(x + 3)$ $7 + 2(3x + 5)$

$3(2m + 1)$ $-4(2 - x)$ $7x - (3 - 4x)$ $d(d + 2) + 3(d - 3)$

$x(3 - x)$ $-x(x + y)$ $2x - (3x + 11)$ $2x(x + 2) - 4(4 - x)$

Simplify the following.

$\dfrac{11x}{20} + \dfrac{8x}{20}$

$\dfrac{4x}{5} + \dfrac{3x}{2}$

$\dfrac{3y}{7} + y$

Solve the following equations.

$3x - 10 = 2$ $\dfrac{k}{2} - 3 = 7$ $\dfrac{3x}{4} = 2$ $3(p - 7) = 21$ $4x - 5 = 3x - 7$

Given $s = ut + \frac{1}{2}at^2$, find u when $s = 360$,
$t = 8$ and $a = 10$.

If $S = \frac{n}{2}(a + l)$ find a when $S = 560$, $n = 20$
and $l = 53$.

If $S = \frac{n}{2}\{2a + (n - 1)d\}$ find the value of a
when $S = 610$, $d = 3$ and $n = 20$.

Use the formula $A = 180 - \dfrac{360}{n}$ to find n
when $A = 120$.

For the data 22, 23, 23, 25, 26, 26, 27, 29, 31, 31, find the:

a mean
b median
c range
d interquartile range
e standard deviation.

The number of goals scored by two basketballers in 20 games are shown below:

Adrian: 8, 9, 8, 6, 7, 7, 9, 4, 8, 8, 6, 7, 5, 7, 8, 8, 8, 9, 9, 10
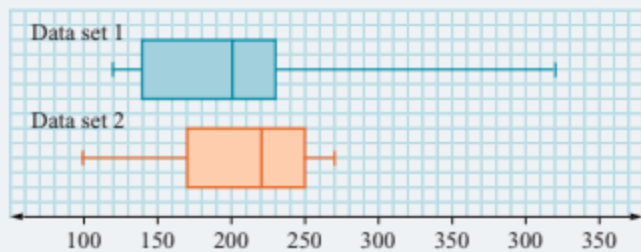Zoltan: 8, 7, 5, 7, 8, 9, 9, 9, 8, 5, 7, 10, 6, 6, 9, 5, 7, 8, 8, 10

1 For each player calculate the:

a mean   **b** median   **c** range
d interquartile range   **e** standard deviation.

2 a Draw two box-and-whisker plots on the same scale.
   b Compare the box-and-whisker plots.

3 Who is the better player? Given reasons for your answer.

Which of the following statements is true for the data sets shown?
A The range of data set 2 is greater than the range of data set 1.
B The median for data set 2 is greater than the median for data set 1.
C The interquartile range is greater for data set 2.
D The highest value occurs in data set 2.

Which statement is true?
A Data set 1 has an outlier and data set 2 is negatively skewed.
B Data set 1 has an outlier and data set 2 is positively skewed.
C Data set 1 is symmetrical and data set 2 is negatively skewed.
D Data set 1 is symmetrical and data set 2 is positively skewed.

Which statement is true?
A Data set 1 has a cluster of scores between 120 and 200.
B Data set 1 has a cluster of scores between 200 and 320.
C Data set 2 has a cluster of scores between 100 and 220.
D Data set 2 has a cluster of scores between 220 and 270.

A random sample of people were surveyed and the results are shown in the table. Which of the following statements is *not* true?

	Born in Australia	Born overseas	Totals
Male	216	24	240
Female	220	40	260
Total	436	64	500

A The percentage of females in the sample is 52%.
B The percentage of females who were born overseas is 8%.
C The percentage of people born overseas who are female is 62.5%.
D The percentage of males who were born in Australia is 90%.

Which of the following statements is *not* true?

A The median of class B is greater than the median of class A.
B The mean of class B is greater than the mean of class A.
C The interquartile range of class B is greater than the interquartile range of class A.
D The range of class B is greater than the range of class A.

Class A		Class B
8 5 2 2 0	4	2 5
9 7 6 3 1	5	3 3 6 9 9
8 7 4 3 2	6	0 1 4 8 8 8
9 8 6 5	7	1 1 3 7
9	8	0 1 1

A survey of drivers by an insurance company yielded the following results.

	Had accident	No accident	Total
Drinkers	27	19	46
Non-drinkers	10	44	54
Total	37	63	100

a What percentage of those surveyed:
   i were drinkers?
                    ii were not drinkers?
   iii were involved in an accident?
                    iv were not involved in an accident?
b What percentage of drinkers were involved in an accident?
c What percentage of drivers who were involved in an accident were drinkers?

END OF QUESTIONS