

**YEAR 9 MATHEMATICS**  
**EXAMINATION – SEMESTER 2 2015**  
**QUESTION AND ANSWER BOOKLET**



**KINROSS  
COLLEGE**

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<b>STUDENT'S NAME:</b>
<b>TEACHER'S NAME:</b>
<b>DATE:</b>

**TIME ALLOWED FOR THIS PAPER:**

Reading time **before** commencing work: 10 minutes  
Working time for this paper: 1 hour & 45 minutes

**MATERIAL REQUIRED / RECOMMENDED FOR THIS PAPER:**

To be provided by the supervisor

- This question and answer booklet

To be provided by the candidate

- Pens, pencils, eraser and / or correction fluid
- Up to two scientific calculators.
- Written notes on **one** unfolded A4 sized paper; can be double-sided

**IMPORTANT NOTE TO CANDIDATES:**

No other items may be taken into the examination room.

It is your responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor **BEFORE** reading any further. All iPads and mobile phones must be turned off and in your bag along with any other devices and notes. Bags are to be closed and placed under the desk.

**INSTRUCTION TO CANDIDATES:**

1. **Read** through the paper to familiarise yourself with all of the questions.
2. Use a **blue or black** ballpoint / ink pen. Do not answer in pencil.
3. **Write** your answers in this booklet.
4. Should you require more space than you have been given please use **the spare sheet** (at the back of this booklet) and ensure that you include your name and the question / statement that you are responding to.

**AT THE END OF THE EXAMINATION:**

- Any planning sheets or other pieces of paper **MUST** be handed in with this booklet.
- At the end of the examination make sure that your name is on your booklet and any other pieces of paper used.

## Structure of this paper

**TOTAL QUESTIONS: 44**

**TOTAL MARKS: 105**

<p><b><u>Section 1:</u> <i>Multiple Choice</i></b> <b>25 questions, 25 marks</b> Attempt questions 1 - 25</p>	<p><b><u>Section 2:</u> <i>Written Answer</i></b> <b>19 questions, 80 marks</b> Attempt questions 1 - 19</p>
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### Instructions to candidates

1. Sitting this examination implies that you agree to abide by the examination rules set down by Kinross College.
2. Answer the questions in the space provided.
3. You must be careful to confine your responses to the specific questions asked and to follow any instructions that are specific to a particular question.
4. A Spare page is included at the end of this booklet. It can be used for planning your responses and/or as additional space if required to continue an answer.
  - (a) Planning: If you use the spare page for planning, indicate this clearly at the top of the page. If you choose to use lined paper for planning, ensure your name and the title is clearly printed.
  - (b) Continuing an answer: If you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number. Fill in the number of the question (s) that you are continuing to answer at the top of the page.
5. This examination contributes towards your grade and will be in your report. If you have any questions, please ask them during the ten-minute reading time.
6. Manage your time wisely. Always provide substantiation (evidence). Make sure that what you have written makes sense.

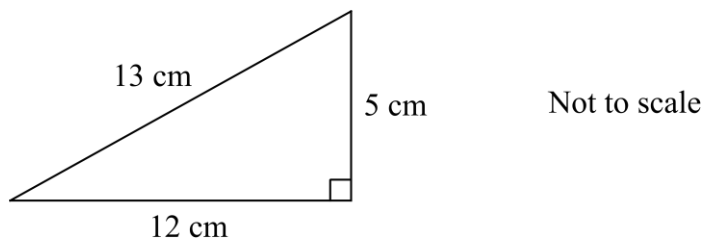
**Note: Do not turn the page until you are asked to do so.**

**Section 1: Multiple choice (Total 25 marks, one mark per question)**

1.  $5\frac{1}{4}\% = ?$

- a) 0.00525
- b) 0.0525
- c) 0.525
- d) 5.25

2. What is the area of the following triangle?



- a)  $30 \text{ cm}^2$
- b)  $32.5 \text{ cm}^2$
- c)  $60 \text{ cm}^2$
- d)  $78 \text{ cm}^2$

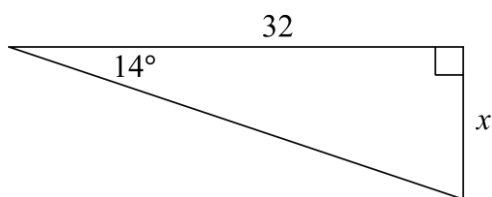
3. What is the gradient of the line  $y = -x + 2$ ?

- a)  $-2$
- b)  $-1$
- c)  $1$
- d)  $2$

4. A three-digit number is formed from the digits 3, 5, 6 and 7.  
What is the probability that the number will be odd?

- a) 0.25
- b) 0.50
- c) 0.75
- d) 0.80

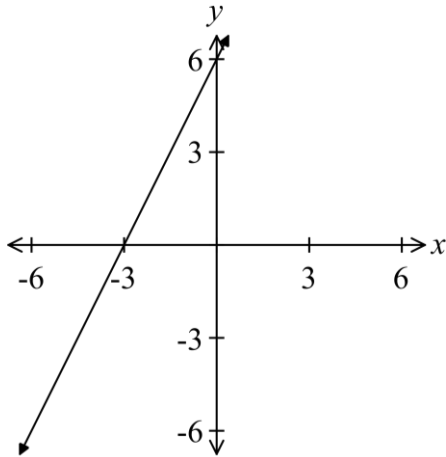
5. Which statement about the below triangle is correct?



Not to scale

- a)  $\cos 14^\circ = \frac{x}{32}$
  - b)  $\sin 14^\circ = \frac{x}{32}$
  - c)  $\sin 14^\circ = \frac{32}{x}$
  - d)  $\tan 14^\circ = \frac{x}{32}$
6. Holly bought a shirt at a discount price of \$38.75. The shirt has a regular retail price of \$96.50.  
What was the approximate percentage discount?
- a) 30%
  - b) 40%
  - c) 50%
  - d) 60%

7. Where does the line cut the  $x$ -axis and  $y$ -axis?



- a)  $(-3,6)$  and  $(6,-3)$
- b)  $(0,6)$  and  $(0,-3)$
- c)  $(-3,0)$  and  $(0,6)$
- d)  $(6,0)$  and  $(0,-3)$
8. What is the value of  $2x - x^2$  if  $x = -3$ ?
- a)  $-15$
- b)  $-3$
- c)  $3$
- d)  $15$
9. The results in a class test were: 9, 6, 8, 8, 6, 4, 10, 8, 5 and 7.  
Which of the following statements is correct?
- a) Median was 5 and the mode was 8.
- b) Median was 7.1 and the mode was 6.
- c) Median was 7.5 and the mode was 7.1.
- d) Median was 7.5 and the mode was 8.

10. Simplify  $6 - 4(2x - 1)$ .

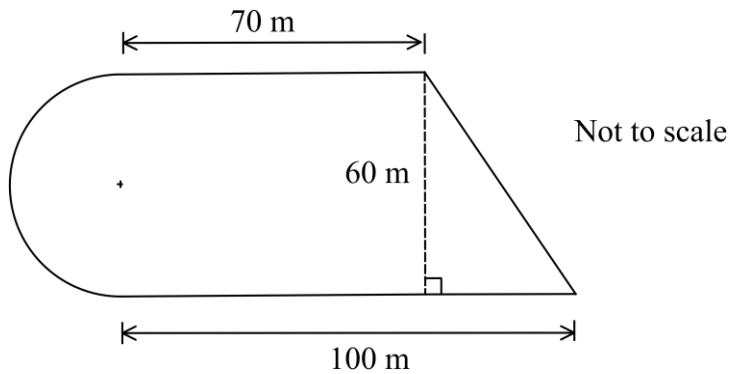
a)  $4x - 2$

b)  $4x + 6$

c)  $7 - 8x$

d)  $10 - 8x$

11. What is the area of this composite shape?



a)  $5398 \text{ m}^2$

b)  $6514 \text{ m}^2$

c)  $8827 \text{ m}^2$

d)  $9727 \text{ m}^2$

12.  $\frac{4a}{3} - \frac{a}{9}$  is equal to:

a)  $\frac{a}{9}$

b)  $\frac{11a}{27}$

c)  $\frac{a}{2}$

d)  $\frac{11a}{9}$

13. What is the simple interest earned after six years when \$450 is invested into an account that pays 3% per annum?

a) \$81.00

b) \$87.32

c) \$531.00

d) \$537.32

14. Which expression does not equal  $3x$ ?

a)  $x \times x \times x$

b)  $3 \times x$

c)  $4x - x$

d)  $x + x + x$

15. The solution to the question is  $x = 40$ . Which of the following is the question?

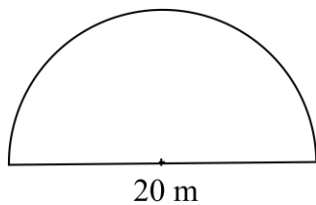
a)  $2x^2 = -3200$

b)  $95 = 5 \times 11 + x$

c)  $x = 7 \times 5 - 75$

d)  $x^2 = \sqrt{50^2 - 30^2}$

16. What is the perimeter (to the nearest metre) of a semicircle with a diameter of 20 m?



a) 36 m

b) 41 m

c) 51 m

d) 63 m

17.  $(x - 4)(x + 5)$  expands to:

a)  $x^2 + x - 20$

b)  $x^2 + x - 9$

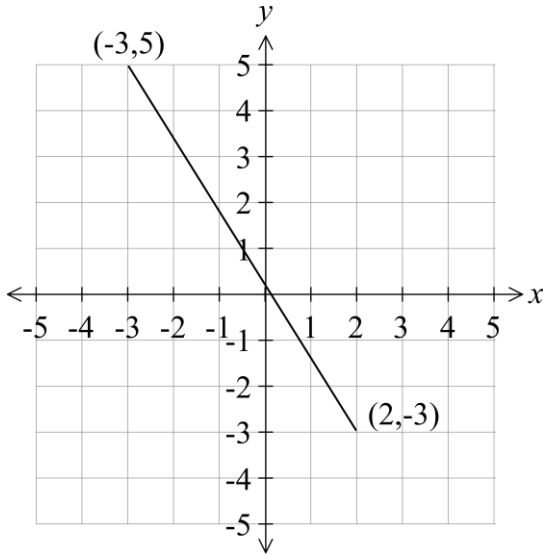
c)  $x^2 - 9x - 20$

d)  $x^2 + 9x + 20$



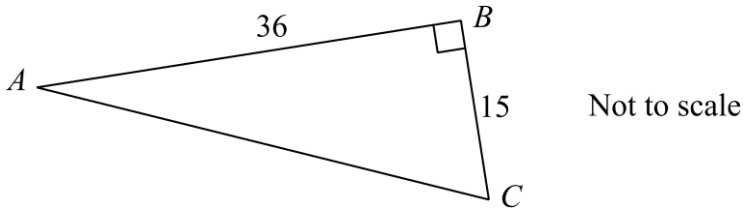


22. What is the midpoint of the line drawn?



- a)  $(-\frac{1}{2}, 1)$                       b)  $(\frac{1}{2}, -1)$   
c) (0.1)                                d)  $(2\frac{1}{2}, 4)$

23. What is the length of AC to the nearest whole number?



- a) 33                                      b) 35  
c) 37                                      d) 39

24. What is the solution to the equation  $3m + 1 = 4 - m$ ?

- a)  $m = \frac{3}{4}$                                 b)  $m = \frac{5}{4}$   
c)  $m = \frac{3}{2}$                                 d)  $m = \frac{5}{2}$

25. If  $4x = 48$  what is the value of  $\frac{x}{3}$ ?

- a) 4                                        b) 9  
c) 11                                      d) 12

## Section 2: Written answer (Total 80 marks)

Mark/s

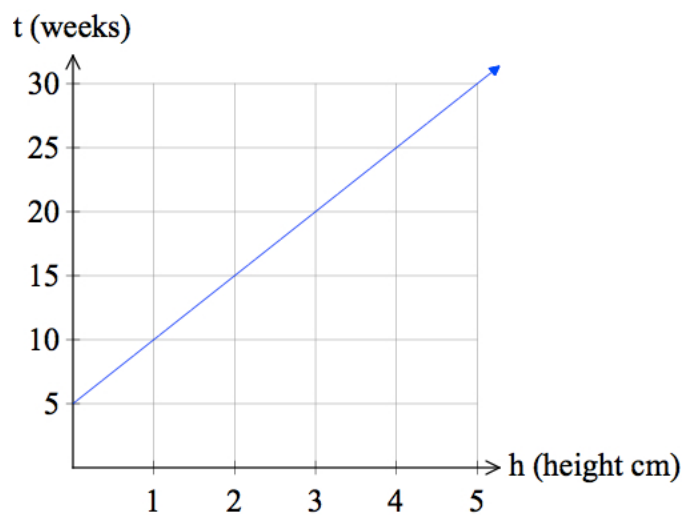
1. Factorise  $88 - 16x$ .

1 (mark)

2. The volume of a cube is 64 cubic centimetres.  
What is the side length of the cube?

3 (marks)

3. Marcus drew a graph of the height of a flowering shrub over thirty weeks.



a) What was the height of the shrub at 20 weeks?

1 (mark)

b) Calculate the gradient of the line.

2 (marks)

c) What is the equation of the line?

2 (marks)

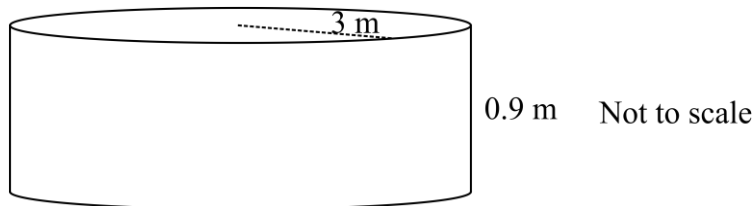
4. Jordan and Poppy invest \$24000 in the ratio of 7:9. 3 (marks)  
How much does each person receive?

5. Solve these equations.

a)  $11 = x - 4$  2 (marks)

b)  $\frac{8x-2}{3} = 4x$  3 (marks)

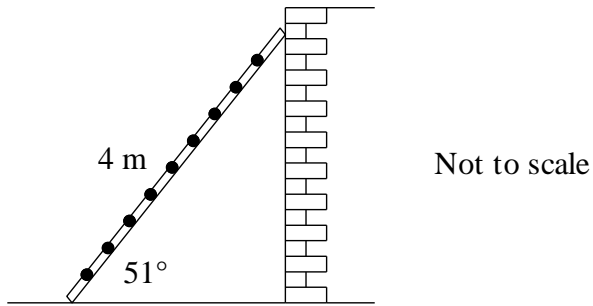
6. A circular above ground swimming pool has a radius of 3 metres and contains water to a uniform depth of 0.9 metres.



- a) What is the volume of water in the pool? Answer in cubic metres, correct to 2 decimal places. 3 (marks)

- b) How many litres of water are in the pool ( $1 \text{ m}^3 = 1000 \text{ L}$ ). Answer correct to the nearest litre. 3 (marks)

7. A 4 m ladder reaches up a vertical wall making an angle of  $51^\circ$  to the ground.



How far is the foot of the ladder from the wall? Answer correct to 1 decimal place. 3 (marks)

8. What is the price paid of a Samsung Galaxy S3 if the selling price is \$225 plus 10% GST? 2 (marks)

9. Simplify.

a)  $-4x \times 5y$  1 (marks)

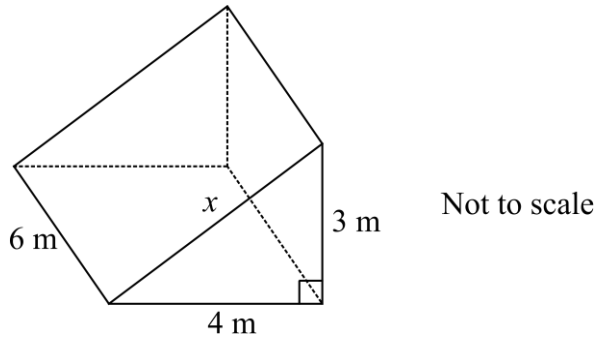
b)  $\frac{7ab}{21a}$  2 (marks)

10. A cylinder has a radius of 3 m and a height of 10 m.

a) Calculate the volume correct to the nearest unit. 2 (marks)

b) Calculate the surface area correct to 3 decimal places. 3 (marks)

11. A triangular prism is shown below.



a) What is the value of  $x$ ? 2 (marks)

b) Find the volume. Answer in cubic kilometres. 3 (marks)

c) Find the surface area. Answer in square millimetres. 4 (marks)

12. A number is multiplied by itself and then 10 is added. The answer is 14. What is the number? 3 (marks)

13. The numbers 1 to 20 are written on separate cards. One card is chosen at random. What is the probability that the card chosen is a prime number or is divisible by 3? 2 (marks)

14. Expand and simplify.

a)  $(5y - 6)(5y + 6)$

1 (marks)

b)  $(2r - 7)^2$

2 (marks)

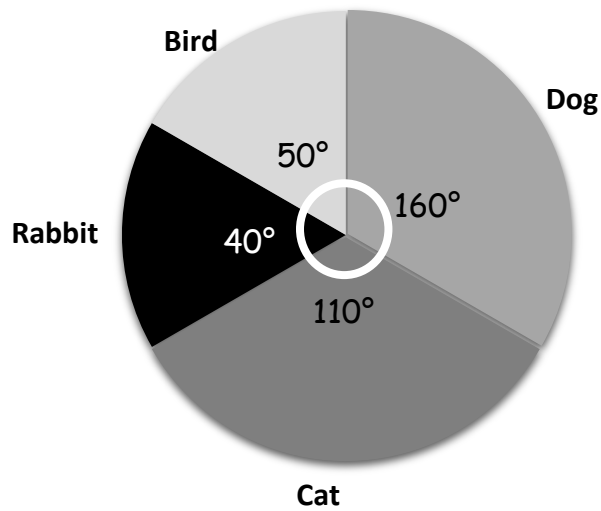
c)  $(y - 2)(3y + 1) - (y - 7)^2$

3 (marks)

15. The probability of Jeremy passing a Mathematics exam is  $\frac{2}{3}$  if he revises and  $\frac{1}{3}$  if he does not revise. The probability that he revises is  $\frac{1}{4}$ . What is the probability of Jeremy passing his Mathematics exam? 8 (marks)

Use a tree diagram to support your answer and express your answer as a percentage correct to one decimal place.

16. Each student in year 9 at Kinross College was asked what their favorite animal is. The results are displayed in the pie chart below.



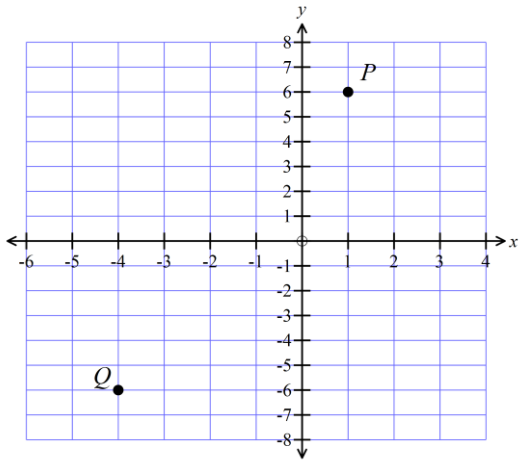
Given that there are 360 pupils in year 9, find the probability that the favorite animal of a randomly selected student is:

- |  |                 |
|--|-----------------|
| a) a dog                                 | <i>1 (mark)</i> |
| b) a cat                                 | <i>1 (mark)</i> |
| c) <b>not</b> a dog or a rabbit          | <i>1 (mark)</i> |
| d) <b>not</b> a dog or a bird            | <i>1 (mark)</i> |
| e) a bird or a dog                       | <i>1 (mark)</i> |
| f) <b>not</b> a rabbit or a cat or a dog | <i>1 (mark)</i> |
17. Sharon made a cake for the family to share. As soon as it was iced, Krystal and Sharon each ate  $\frac{1}{6}$  of it, Michael ate  $\frac{1}{4}$ , and Eva and Toa ate  $\frac{1}{12}$  each. What fraction of the cake was left for the next day? 4



18. Find the distance between the points  $P(-4, -6)$  and  $Q(1, 6)$ .

2 (marks)



19. David has the 4 metal rods shown which can be joined at the ends. Which three could he join together to form a right angled triangle?

4 (marks)

