OXFORD CAMBRIDGE AND RSA EXAMINATIONS

General Certificate of Secondary Education

MATHEMATICS C
(Graduated Assessment)

1966/2338A

MODULE M8 – SECTION A

Monday   **23 JANUARY 2006**   Morning   30 minutes

Candidates answer on the question paper.
Additional materials:
    Geometrical instruments
    Tracing paper (optional)

Candidate
Name

Centre
Number

Candidate
Number

TIME   30 minutes

INSTRUCTIONS TO CANDIDATES

* Write your name, Centre number and candidate number in the boxes above.
* Answer **all** the questions.
* Write your answers on the dotted lines unless the question says otherwise.
* Use blue or black ink. Pencil may be used for graphs and diagrams only.
* Read each question carefully and make sure you know what you have to do before starting your answer.
* There is a space after most questions. Use it to do your working. In many questions marks will be given for a correct method even if the answer is incorrect.
* Do not write in the bar code. Do not write in the grey area between the pages.
* **DO NOT** WRITE IN THE AREA **OUTSIDE** THE BOX BORDERING EACH PAGE. ANY WRITING IN THIS AREA WILL NOT BE MARKED.

INFORMATION FOR CANDIDATES

* The number of marks is given in brackets [ ] at the end of each question or part question.
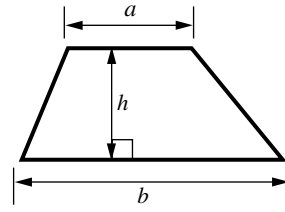* The total number of marks for this Section is 25.

WARNING
You are not allowed to use a
calculator in Section A of this paper.

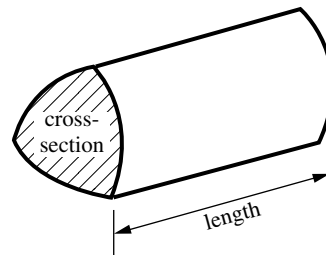| FOR EXAMINER'S USE	
Section A	
Section B	
TOTAL	

This question paper consists of 8 printed pages.

[Turn over

Formulae Sheet

Area of trapezium $= \frac{1}{2}(a + b)h$

Volume of prism = (area of cross-section) × length

1 **(a)** Find the values of the following.

(i) 2×4^3

(a)(i) ....[1]

(ii) $\sqrt{169}$

(ii) ....[1]

(b) Simplify.

(i) $a^2 \times a^8$

(b)(i) ....[1]

(ii) $\dfrac{12c^6 d}{2c^4 d^4}$

(ii) ....[3]

6

[Turn over

2 **(a)** Here are the first four patterns in a dot sequence.

Pattern 1   Pattern 2   Pattern 3   Pattern 4

Explain why an expression for the number of dots in the nth pattern is $n(n + 2)$.

....

....[1]

(b) Here are the first four terms of another sequence.

$$4 \qquad 10 \qquad 18 \qquad 28$$

They may be written in the following way.

$$1 \times 4 \qquad 2 \times 5 \qquad 3 \times 6 \qquad 4 \times 7$$

Find an expression for the nth term of this sequence.

(b) ....[2]

3

3 **(a)** Express 0·08 as a fraction in its simplest form.

(a) ....[1]

(b) Express $\frac{4}{9}$ as a decimal.

(b) ....[2]

3

4 **(a)** Use dimensions to explain why the area of a circle is given by πr^2 and **not** $2\pi r$.

....

....[1]

(b) The radius of a circle is $\sqrt{5}$ cm.

Find the area of the circle.
Write the area as simply as possible, leaving π in your answer.

(b) .... cm^2 [1]

2

[Turn over

5 On her way to work, Yasmin goes through a set of traffic lights and over a level crossing.
The probability that she has to stop at the traffic lights is 0·4.
The probability that she has to stop at the level crossing is 0·3.
These probabilities are independent.

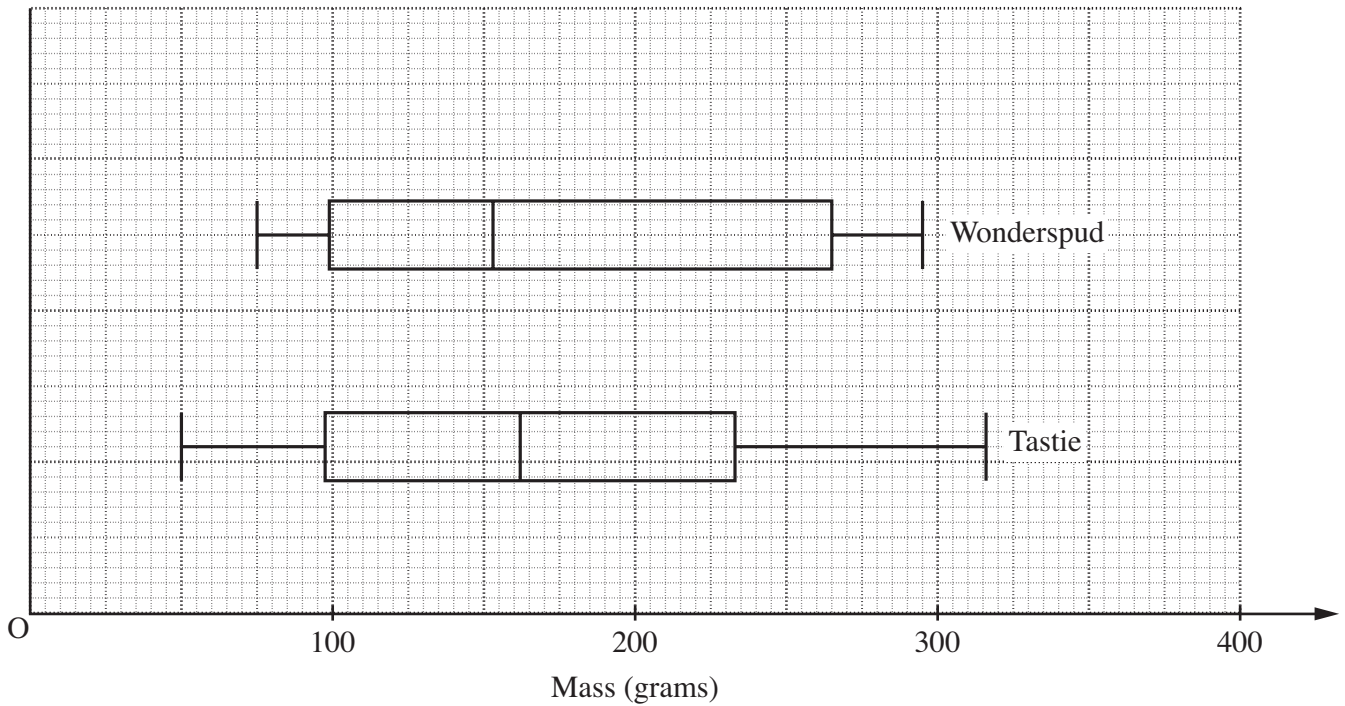**(a)** Complete the tree diagram to show this information.

Traffic lights   Level crossing

```
                                        ......      stop
                           stop  <
              ......  /            ......      not stop
                    <
              ......  \            ......      stop
                           not stop <
                                        ......      not stop
```
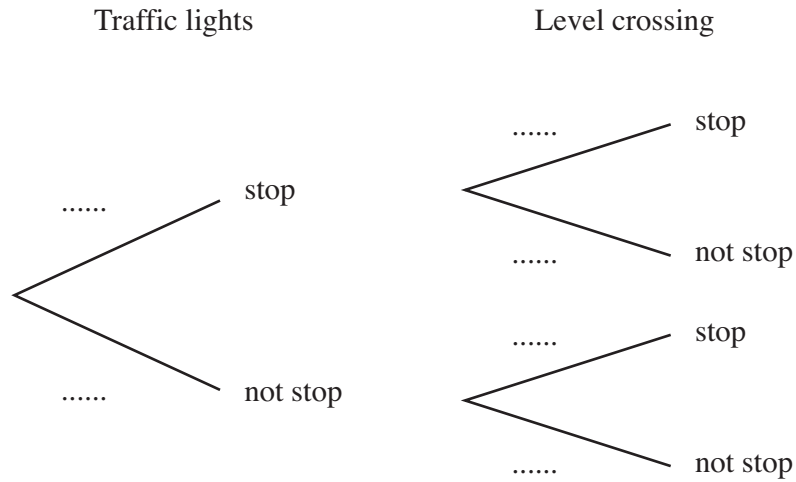
[2]

(b) Find the probability that, on her way to work, Yasmin stops at
both the traffic lights and the level crossing.

(b) ....[2]

4

6   These box plots show the distributions of the masses of two different types of potato sold in a supermarket.

Mass (grams)

Here are two statements comparing these distributions.

For each one, write whether you agree or disagree.
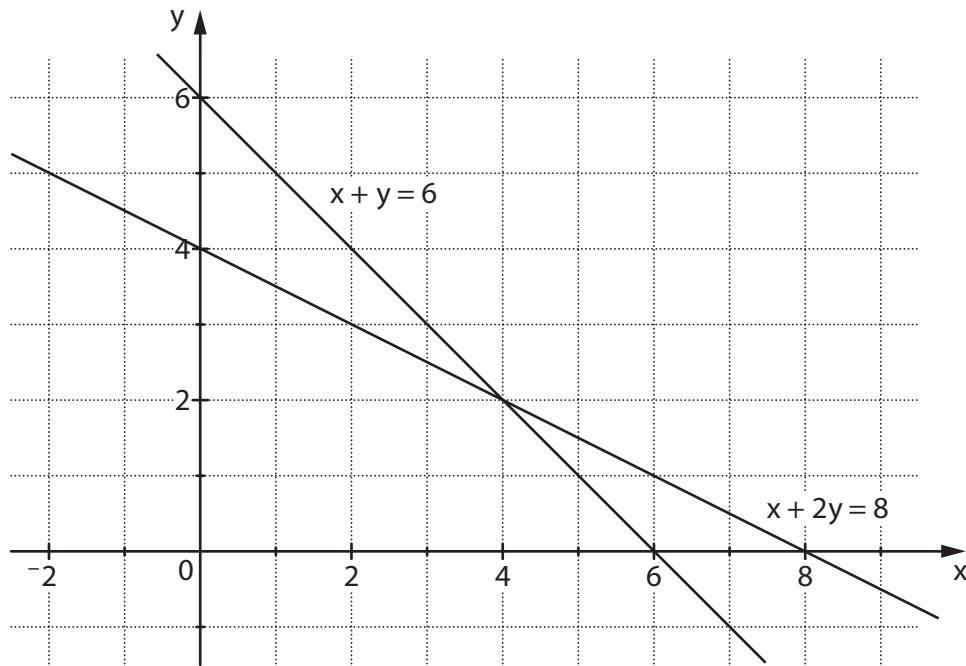Give your reason, stating clearly which statistic you use to make each decision.

Statement	Agree/Disagree	Reason
Tastie are larger than Wonderspud on average		
Tastie are more consistent in size than Wonderspud		

[2]

2

TURN OVER FOR QUESTION 7

7   (a)

A region R on the graph satisfies all these inequalities.

$$x > 0 \qquad x + y < 6 \qquad x + 2y > 8$$

Use shading to identify the region R and label it R.   [2]

(b)   Solve algebraically these simultaneous equations.

$$x + 3y = 9$$
$$2x - y = 11$$

(b) x = ...

y = ...[3]

5