

Is Year 12 Maths Methods the right choice for you?

The maths methods pre-test

To help you understand what is expected in Year 12 maths methods, we would like you to do the pre-test.

- Do the pre-test. Time how long it takes.
- Correct your answers and work out your score.
- See what we recommend below

Your pre-test result... What we recommend ...

If your score was less than $\frac{10}{20}$

If you got less than half the pre-test right you will most likely need a lot of time and support to make a success of Year 12 maths methods. Past experience has shown that students scoring less than 10 out of 20 are not able to continue with this subject because they find it too difficult. We strongly recommend that you contact the Maths Methods teachers to discuss your options.

If you scored between 10 and 15 you will most likely need revision support throughout the year to develop the skills expected. This means making extra time available for your studies, and perhaps finding a tutor to help you. We suggest that you consider realistically whether you will be able to make the extra study time available. Contact the Maths Methods teachers to discuss your options.

If your score was between $\frac{10}{20}$ and $\frac{15}{20}$

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If you scored between 15 and 20 you should be able to cope with most of the mathematical skills expected. However, you will also need to make regular study time a part of your weekly schedule. If you have any concerns, contact the DECV, and speak to the Maths Methods teachers.

It's only fair to warn you...

If you found the pre-test difficult and/or you will enrol late you will probably find this subject very challenging.

To have the best chance of making this year a success, you may wish to consider other options.

The quickest way of finding out more is to ring the DECV, and speak to the Year 12 student manager. Phone: (03) 8480 0000, or toll free (in Victoria) 1800 133 511

MATHEMATICAL METHODS (CAS)
UNITS 3 and 4
PRETEST

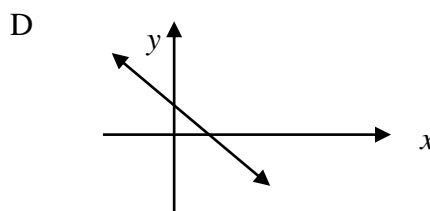
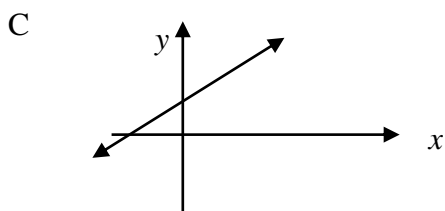
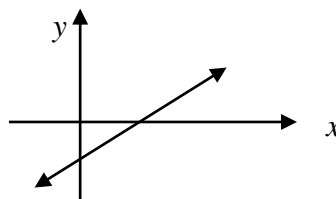
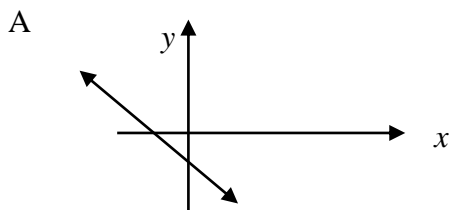
SECTION A: MULTIPLE CHOICE QUESTIONS

Select the correct answer. Each question is worth 1 mark

1. Which of the following set of ordered pairs is represented on the number plane by collinear points (in the same straight line)?

A $\{(1, 2), (1, 3), (2, 4)\}$ B $\{(3, 4), (1, 2), (5, 6)\}$
C $\{(3, 4), (-1, 3), (5, 6)\}$ D $\{(2, 1), (2, 2), (3, 1)\}$

2. Which one of the following could be the graph of $2x - 3y = 6$?



3. The probability of selecting a queen of spades or a king of diamonds from a deck of 52 well shuffled cards is

A $\frac{8}{52}$ B $\frac{1}{52}$ C $\frac{2}{52}$ D $\frac{50}{52}$

4. For the function $f(x) = x^3 - 2x$,

(a) $f(2) =$
A 4 B 2 C 6 D 12

(b) $f(-1) =$
A -1 B 3 C 1 D 1

5. The expression $4 + 3[2x - (2 - 3x)]$ simplifies to

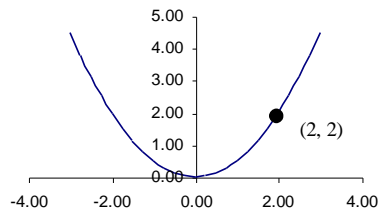
- A $15x + 2$ B $-2 - 3x$ C $15x - 2$ D $3x - 2$

6. The value of the expression $\frac{xy}{zy - y}$ when $x = 2$, $y = -2$, and $z = 3$ is

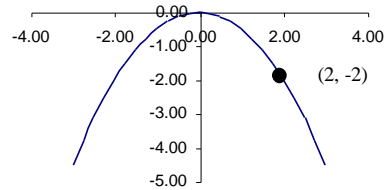
- A -1 B $\frac{1}{2}$ C 1 D $-\frac{1}{2}$

7. Which one of the following graphs is described by $y = -\frac{1}{2}x^2$?

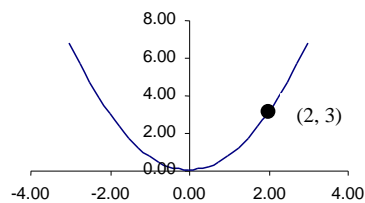
A



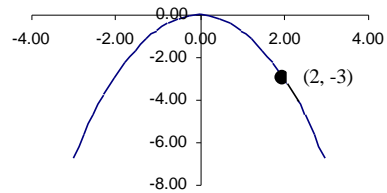
B



C



D



8. If you solve the equations below simultaneously

$$x = 2y$$

$$x + 2y = 6$$

the solutions are:

- A $x = 2$ B $x = 3$ C $x = 3$ D $x = 3$
 $y = 3$ $y = 1.5$ $y = 6$ $y = 3$

9. If $p = \frac{1}{x}$ and $q = \frac{1}{2x}$, then $p + q =$

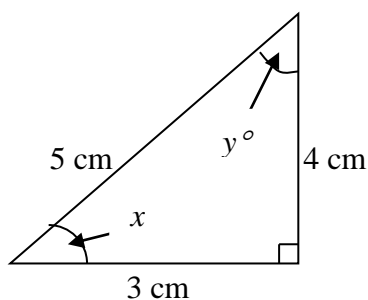
- A $\frac{2x+1}{2x}$ B $\frac{x+1}{2x}$ C $\frac{2x}{x+1}$ D $\frac{3}{2x}$

10. If $\frac{1}{x} = u + v$ and $\frac{1}{y} = u - v$, then $x - y$ is equal to

- A $\frac{-2v}{u^2 - v^2}$ B $\frac{2v}{u^2 - v^2}$ C $\frac{2uv}{u^2 - v^2}$ D $\frac{2u}{u^2 - v^2}$

SECTION B: SHORT ANSWER QUESTIONS

1. For the triangle shown write down the following trig ratios



- (a) $\sin x^\circ =$
- (b) $\tan y^\circ =$
- (c) $\sin y^\circ =$
- (d) $\tan x^\circ =$

2 marks

2. Factorise the following expressions

- (a) $x^2 - 3x$
- (b) $2x^2 + 7x - 4$
- (c) $\frac{a^2b}{2} + 2ab^2$

3 marks

3. Rearrange (transpose) the following expressions to make x the subject (in the form $x =$)

- (a) $y = 3x$
- (b) $q = 4 - x$
- (c) $w = 2x + 1$
- (d) $p = \frac{2Ix}{3}$

2 marks

4. A restaurant offers 4 main dishes and 2 desserts.
Their lunchtime special offers any main course and a dessert for \$10.

<p><i>Mains</i></p> <p>Chicken</p> <p>Steak</p> <p>Fish</p> <p>Vegetarian</p>	<p><i>Desserts</i></p> <p>Fruit sundae</p> <p>Pancakes</p>
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- (a) Draw a tree diagram to show all possible combinations of main course and dessert.

(b) Assuming any combination is equally likely, use the tree diagram to work out the following probabilities.

(i) The probability that a customer has any main course with a fruit sundae for dessert.

(ii) The probability that a customer has a vegetarian main course and any dessert.

2 marks + 1 mark

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