6492MD: Assignment 1

Before completing this assessment you need to work through

either	or
Maths in Focus 11 Mathematics Advanced 3RD EDITION Published: 21/12/2018 ISBN: 9780170413152 Author: Margaret Grove Chapter 1 Algebraic techniques and Chapter 2 Equations and inequalities	Maths in Focus 11 Mathematics Extension 1 3RD EDITION Published :08/11/2018 ISBN :9780170413299 Author : Margaret Grove Chapter 1 Algebraic techniques and Chapter 2 Equations and inequalities

What you need to do

- Attempt all questions.
- **Write your answers using a black pen on your own paper.**
- Show all necessary working. Marks are given for correct working.
- Leave plenty of space around your answers for your teacher's comments.
- If you have studied the work in your textbook, and you are stuck on an assignment question, you can contact us for help.
- It is important to present your work clearly and well to avoid having it returned to you unmarked as a non-serious attempt.

Write your answers using a black pen on your own paper.

Ten multiple choice questions:

Choose the **best** answer A B C or D (**no working** for multiple choice questions).

Simplify fully the expressions in Q1 to 7.

		A	B	C	D
1	$\frac{q^3r^{-2}}{q^{-1}r} =$	q^2r^{-3}	q^4r^{-3}	q^2r^{-1}	q^4r^{-1}
2	$x^n(x^{6n})^{-\frac{1}{2}} =$	$\frac{x^n}{x^{3n}}$	x^nx^{-3n}	x^{-2n}	x^{4n}
3	$24x^5y^3 \div 6x^2y^{-1} =$	$4x^7y^4$	$4x^7y^2$	$4x^3y^4$	$4x^3y^2$
4	$\sqrt[3]{-8x^3y^{12}} =$	$-8^{\frac{1}{3}}xy^4$	$8^{-3}x^0y^9$	$-\frac{8}{3}xy^4$	$-2xy^4$
5	$\sqrt{72} =$	8.485	$3\sqrt{8}$	$2\sqrt{18}$	$6\sqrt{2}$
6	$\sqrt{5} + \sqrt{45} - 3\sqrt{20} =$	$4\sqrt{5}$	$2\sqrt{5}$	$-2\sqrt{5}$	$-4\sqrt{5}$
7	$2\sqrt{3} \times 5\sqrt{12} =$	$10\sqrt{36}$	60	$20\sqrt{3}$	$\sqrt{3600}$

8 Make v the subject in the kinetic energy formula $E = \frac{1}{2}mv^2$.

$v =$	$\pm 2\sqrt{\frac{E}{m}}$	$\pm\sqrt{\frac{2E}{m}}$	$\pm\sqrt{\frac{E}{2m}}$	$\pm\sqrt{\frac{E}{m}}$

9 Solve the equation $x^{\frac{2}{3}} = 16$

$x =$	24	32	48	64

10 Choose the expression (with a rational denominator) equal to $\frac{\sqrt{3}}{\sqrt{3}-2}$.

$\frac{\sqrt{3}}{\sqrt{3}-2} =$	$\frac{3}{3-2\sqrt{3}}$	$\frac{-3}{3-2\sqrt{3}}$	$-3-2\sqrt{3}$	$3+2\sqrt{3}$

For the following questions, **write your answers using a black pen on <u>your own paper</u>. Show all necessary working.** Marks are given for correct working.

11 (a) The volume of a sphere is $V = \frac{4}{3}\pi r^3$. Make r the subject.

(b) Using your (a) formula, find the diameter of a sphere, in metres correct to 3 significant figures, if its volume is 1L.

12 Simplify $\frac{\sqrt{6}-\sqrt{5}}{\sqrt{6}+\sqrt{5}}$ by rationalising the denominator.

Hence find the values of x and y if $\frac{\sqrt{6}-\sqrt{5}}{\sqrt{6}+\sqrt{5}} = x - y\sqrt{30}$.

13 (a) Factorise $5b^2c - 15b^3c^2$.

(b) Factorise $2 - 2a + b(1 - a)$.

(c) Hence, simplify $\frac{5b^2c-15b^3c^2}{2-2a+b(1-a)} \div \frac{5b^2}{1-a}$.

14 (a) Factorise $x^2 + 9x + 20$.

(b) Factorise $x^2 - 25$.

(c) Hence, simplify $\frac{1}{x^2+9x+20} - \frac{1}{x^2-25}$.

15 Solve $|2x - 3| = 7$.

16 Solve $8 - 3z = 5(2 - z) + 9$.

17 Solve $2^x = 4^{x+1}$.

18 Solve $\frac{t}{4} > \frac{3t-1}{3}$.

19 Factorise and solve $3x^2 + 19x + 20 = 0$.

20 Solve the equation $(x+1)(x-2) = 10$.

21 Solve the simultaneous equations $y = x^2 - 1$ and $x + 4y - 101 = 0$.

Checklist

I have:

- answered every question
- written my answers using a black pen on my own paper
- shown necessary working.

If you are unable to complete this task for a specific reason, please contact your teacher to discuss alternative arrangements for demonstrating your skills and knowledge.