



TRINITY GRAMMAR SCHOOL  
MATHEMATICS DEPARTMENT



# YEAR 11 MATHEMATICS

## ASSESSMENT TASK 2

*Time Allowed : 60 minutes*

*DATE : Monday 19<sup>th</sup> February 2007*

**WEIGHTING : 20%**

Name : \_\_\_\_\_ Class : \_\_\_\_\_

Teacher: \_\_\_\_\_

### INSTRUCTIONS:

- \* Do not open this paper until instructed to do so.
- \* Approved Calculators may be used.
- \* All necessary working must be shown to gain full marks. Marks may be deducted for careless or badly arranged work.
- \* This paper consists of Three Questions.
  - Question 1 – ( 13 Marks )
  - Question 2 – ( 23 Marks )
  - Question 3 – ( 34 Marks )Total 70 Marks
- \* Attempt all questions.

Show all necessary working in the spaces provided

	Mark Value	Question 1 ( 13 Marks )
1)	1	Find the value of $\frac{1}{7 + 5 \times 3}$ correct to three significant figures.
2)	1	Simplify $ 2  +  -5 $ .
3)	2	Simplify $\frac{16}{2^{3x} \times 8^{1-x}}$ .
4)	1	Find the value of $19^{-0.5}$ to two decimal places.
5)	2	Express $0.\dot{2}\dot{3}$ as a fraction in its simplest form.

6)	2	<p>At Octopus Communications' annual sale, all mobile phones were discounted by 40%. Cedric paid \$630 for a mobile phone at the sale. What was the original price of the phone?</p>
7)	2	<p>A car engine is running at 7000 revolutions per minute.</p> <ol style="list-style-type: none"> <li>How many revolutions are made in one hour?</li> <li>If this engine uses 10 litres of fuel in one hour, how much fuel in ml does it use every revolution? Leave answer to 2 decimal places.</li> </ol>
8)	2	<p>The volume <math>V</math> of a sphere is given by <math>V = \frac{4}{3}\pi r^3</math>. If a sphere has volume <math>5.7 \text{ cm}^3</math>, find the radius correct to two decimal places.</p>

**Question 2 ( 23 Marks )**

1) 2 Simplify  $5\sqrt{3} + \sqrt{20} - 2\sqrt{12} + \sqrt{45}$

2) 2 Express  $\frac{2}{4 + \sqrt{3}}$  with a rational denominator.

3) 1 Write  $5\sqrt{7}$  as a complete surd.

4) 1 Simplify  $\frac{6}{x} \times \frac{10y}{3} \div \frac{5y}{x}$ .

5) 2 Simplify  $\frac{2x}{4} - \frac{x+2}{3}$ .

6) 2 Factorise  $2x^2 - 7x - 15$

7)	2	Factorise fully $ab - a - bx + x$ .
8)	2	Factorise fully $64x^2 - 16x^4$ .
9)	2	Factorise fully $27p^3 + 125$ .
10)	2	Factorise fully: $x^2 - y^2 + 3x + 3y$
11)	2	Factorize and simplify: $\frac{t^2 - 9}{3t - 9}$ .

12)

3

Expand and simplify  $(3a - b)^2 - (a - b)(a + b)$

Question 3 ( 34Marks )		
1)	1	i) Change to index form: a) $\frac{1}{2a-b}$  ii) Write without negative indices: $\left(\frac{x+y}{x-y}\right)^{-1}$
2)	1	Find those values of $x$ which satisfy the inequality $15 - 4x < 7$ .
(3)	2	Solve the equation $4(x - 5) = 3 - 2(x - 1)$ .
4)	2	Solve $\frac{2}{3x} + \frac{7}{5x} = 1$ .

5)	2	Solve the equation $\frac{3}{x+1} = \frac{4}{x}$ .
6)	3	Graph on the number line the solution set of: $\frac{x-1}{2} - \frac{2x-3}{3} < 1$ .
7)	3	Use the quadratic equation formula to solve the equation $4h^2 + 12h + 1 = 0$ . Give answer to two decimal places.
8)	2	Solve the quadratic equation $3x^2 - 4x - 4 = 0$ .



9)	2	Solve for $x$ : $(2x + 3)^2 = 25$ .
10)	2	Solve the simultaneous equations $x + y = 1$ $2x - y = 5.$
11)	3	Graph the solution of $ x + 2  \leq 3$ on a number line.
12)	3	Solve $ 8y - 1  = 4y + 7$ .

13)	3	<p>Solve simultaneously</p> $y = 2x + 1$ $y = x^2 - 3x + 5.$
14)	4	<p>Simplify <math>\frac{3x+6}{x^2-4} \div \frac{2x^2+6x}{x^2+x-6}</math>.</p>