GRADE 10

MATHEMATICS EXAMINATION

TIME: 1½ Hours

MARKS: 140

Question 1 Tick the appropriate column(s) in the table below. (10)

	Factor of 24	Integer	Natural	Whole	Rational	Irrational	Non-real	Prime
$\sqrt{4}$								
$8 \div 0$								
$\sqrt{-4}$								
$\sqrt{6}$								
$\dfrac{22}{7}$								
$\sqrt[3]{27}$								
17								
$\dfrac{0}{8}$								
$0,\dot{3}$								
1.231...								

Question 2 Circle the correct letter.

2.1   What could the last digit of 172_ (a four-digit number) be if the number is
        divisible by 3?   (1)

        A.   3;6;9

        B.   2;5;8

        C.   1;2;3

        D.   1;4;7

2.2   A square number.   (1)

        A. $\sqrt{4}$

        B.   27

        C.   16

        D.   5

2.3   The LCM of 8 and 14.   (1)

        A.   2

        B.   112

        C.   24

        D.   56

2.4   123,799 rounded off to two decimal places.   (1)

        A.   123,80

        B.   124,00

        C.   123,8

        D.   123,800

Question 3

3.1   Write the number 900 as a product of its prime factors.   (2)

3.2   Calculate $\sqrt{900}$ without using a calculator.   (2)

Question 4 Simplify. **Show all steps of working**.

4.1 $(5 - 2 \times 3)^2 - 2\sqrt[3]{-8}$ (3)

4.2 $-\sqrt{16 + 9} \div [(-5)^2(-5)]$ (3)

4.3 $\quad 1\frac{2}{3} - \left(1\frac{1}{5}\right)^2 \div \frac{2}{5} - 1$ (6)

Question 5

$$-3 + 2x - 5x^4$$

5.1 What type of expression is the one above? (1)

5.2 Write down the term with the largest coefficient. (1)

5.3 What is the index of the 3rd term? (1)

5.4 Write down any example of an algebraic expression that is a binomial with degree 2, in descending powers of x and with a constant term of 7. (1)

Question 6 Write out in full without using any numbers.

6.1 $4x + y^3$ (1)

6.2 $(x^3)^2 \div 2y$ (1)

Question 7 State the number of terms in each of the following algebraic expressions.

7.1 $\dfrac{7a - 8b}{2b\,(a+2)}$ (1)

7.2 $-2a + 5\,(a - b) \div b^2 - \dfrac{b}{3a}$ (1)

Question 8   Simplify.

8.1 $7x - 7$ (1)

8.2 $abc + cab$ (1)

8.3 $y^2 + 7y - 2y^2 - 3y$ (2)

8.4 $-2\left(3xy^2\right)^3$ (2)

8.5 $\dfrac{2x^2}{10x^5}$ (2)

8.6 $\dfrac{\left(6xy^2\right)\left(-5x^2y^3\right)}{-2\left(7x^3y^5+8y^5x^3\right)}$ (4)

8.7 $\dfrac{8a^3-12a^2+4a}{4a}$ (3)

8.8 $3a\left(6a-b\right)-2\left(-ab+9a^2\right)$ (3)

8.9 $7x^2 + 3x^2(x-3) - \sqrt{16x^6} \div 4x - (-2x)^3$ (6)

Question 9 If $a = -1$; $b = \dfrac{1}{2}$ and $c = 2$, find the value of the following (show all steps of working).

9.1 abc (1)

9.2 $c - a - (4b + c)$ (2)

9.3 $-2a^c + 2ac \div b$ (3)

Question 10 Solve for .

10.1   (1)

10.2   (1)

10.3   (1)

10.4   (1)

10.5   (1)