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| Kimberley School |
| Year 12 Summer Assignment |
| Total Marks: 120 |

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| Kimberley Mathematics Department1/1/2016 |

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| Mark | Grade | Target grade |
| Strength: |
| Feed forward: Please read my notes and redo incorrect questions in red pen, hand in for remarking. |
| SP &G |
| Remarking: 100% achieved? | Yes/No |

**Indicate your final answers by highlighting or underlining**

**Section 1 – Algebra**

(Total: 80 Marks)

1. Factorise fully;
2. $3a+6$

…………………………………………………………………………………………………………………………………

1. $-6b+12$

…………………………………………………………………………………………………………………………………

1. $15p-3$

…………………………………………………………………………………………………………………………………

1. $d^{2}+5d$

…………………………………………………………………………………………………………………………………

1. $28e^{3}-21e$

…………………………………………………………………………………………………………………………………

1. $x^{2}+5x+6$

…………………………………………………………………………………………………………………………………

1. $q^{2}-3q-10$

…………………………………………………………………………………………………………………………………

1. $y^{2}-16$

…………………………………………………………………………………………………………………………………

1. $2x^{2}+5x-7$

…………………………………………………………………………………………………………………………………

1. $8x^{2}y^{3}-12xy^{2}+24xy$

…………………………………………………………………………………………………………………………………

 (15 Marks)

1. Evaluate the following expressions giving your answers in exact form
2. $3a-8b when a=-5 and b=3$

…………………………………………………………………………………………………………………………………

1. $2p^{2}+5\left(q+p\right) when p=\frac{1}{4} and q=\frac{3}{16}$

…………………………………………………………………………………………………………………………………

1. $\frac{–b-\sqrt{b^{2}-4ac}}{2a} when a=-1 , b=-4 and c=8$

…………………………………………………………………………………………………………………………………

1. $2Rcos\left(θ-60\right)when R=-\frac{3}{4} and θ=240°$

…………………………………………………………………………………………………………………………………

1. $x^{3}+2x^{2}+8x-10 when x=-2$

…………………………………………………………………………………………………………………………………

1. $5x^{4}-9x^{3}+\frac{3}{4} when x=\frac{1}{2}$

…………………………………………………………………………………………………………………………………

1. $\frac{-b\pm \sqrt{b^{2}-4ac}}{2a} when a=\frac{1}{4} , b=\frac{4}{3} and c=-1$

…………………………………………………………………………………………………………………………………

1. $\frac{3x^{3}-4x^{2}+2y-8}{x-y} when x=\sqrt{2} and y=-\sqrt{8}$

…………………………………………………………………………………………………………………………………

(20 marks)

1. Simplify the following fractions
2. $\frac{4s^{2}t^{3}}{12s^{2}t}$

…………………………………………………………………………………………………………………………………

1. $\frac{x^{2}+2x}{x+2}$

…………………………………………………………………………………………………………………………………

1. $\frac{b-2}{(b-2)^{2}}$

…………………………………………………………………………………………………………………………………

1. $\frac{3}{x+2}+\frac{2}{2x+3}$

…………………………………………………………………………………………………………………………………

1. $\frac{x}{x+2}×\frac{x^{2}+2x}{x^{2}}$

…………………………………………………………………………………………………………………………………

1. $\frac{5y-10}{15}÷\frac{y-2}{3y}$

…………………………………………………………………………………………………………………………………

1. $\frac{4x+12}{7x}×\frac{5x^{2}-10x}{6-9x}×\frac{21}{2x-4}$

…………………………………………………………………………………………………………………………………

(15 Marks)

1. Rearrange the following equations to make $x$ the subject
2. $y=3x+4$

…………………………………………………………………………………………………………………………………

1. $y=\frac{2x-5}{3}$

…………………………………………………………………………………………………………………………………

1. $y=ax+bx$

…………………………………………………………………………………………………………………………………

1. $y=\frac{1}{3x-4}$

…………………………………………………………………………………………………………………………………

1. $y=\sqrt[3]{5-x^{2}}$

…………………………………………………………………………………………………………………………………

 (10 Marks)

1. Solve the following pairs of simultaneous equations
2. $4x+2y=26$

$$x-2y=4$$

…………………………………………………………………………………………………………………………………

1. $3a+2b=9$

$$4a-5b=35$$

…………………………………………………………………………………………………………………………………

1. $5p+3q=7$

$$2p-q=11$$

…………………………………………………………………………………………………………………………………

1. $\frac{x}{3}-\frac{y}{4}=\frac{3}{2}$

$$2x+y=14$$

…………………………………………………………………………………………………………………………………

1. $\frac{5s}{6}+\frac{t}{4}=8$

$\frac{2s}{5}+\frac{t}{10}=4$

…………………………………………………………………………………………………………………………………..

 (20 Marks)

**Section 2 – Number**

(Total: 20 Marks)

Calculate the following showing your working and simplifying where appropriate;

A) $\frac{1}{3}+\frac{3}{4}$

………………………………………………………………………………………………………………………

B) $1\frac{5}{6}+2\frac{1}{2}$

………………………………………………………………………………………………………………………

C) $3\frac{2}{5}-4\frac{1}{8}$

………………………………………………………………………………………………………………………

D) $2\frac{2}{3}×\frac{1}{4}$

………………………………………………………………………………………………………………………

E) $5\frac{1}{3}÷2\frac{1}{4}$

 ………………………………………………………………………………………………………………………

 (10 Marks)

F) Express the following in the form $a\sqrt{b}$

 i) $\sqrt{50}$ …………………………………………………………………………………………….

ii) $\sqrt{27}-\sqrt{3}$ …………………………………………………………………………………………….

iii) $\sqrt{8}+3\sqrt{32}$ …………………………………………………………………………………………….

 iv) $3\sqrt{56}-7\sqrt{126}+\sqrt{1400}$ ………………………………………………………………………………..

 ……………………………………………………………………………….. (7 Marks)

G) Rationalise the denominator of each of these fractions, simplify where appropriate

 i) $\frac{1}{\sqrt{2}}$ ………………………………………………………………………………………………………………………

 ii) $\frac{9}{\sqrt{15}}$ ………………………………………………………………………………………………………………………

 iii) $\frac{8}{\sqrt{40}}$ ……………………………………………………………………………………………………………………… (3 Marks)

**Section 3 – Coordinate Geometry**

(Total: 20 Marks)

1. Plot the following lines on the axes provided;
2. $y=3x-2$
3. $y=\frac{1}{2}x+3$
4. $y=-x+2$

 (6 Marks)

1. For the points A, B and C, which are at coordinates (1 , 3) , (-2 , -3) and (2 , -5) respectively, find;
2. The exact distance between B and C

………………………………………………………………………………………………………………………

1. The midpoint of the line AB

………………………………………………………………………………………………………………………

1. The gradient of the line BC

………………………………………………………………………………………………………………………

1. The equation of the line going through A and B

………………………………………………………………………………………………………………………

1. The coordinates where the line going through A and B intercept with the axes

………………………………………………………………………………………………………………………

1. The equation of any line parallel to the line AB

………………………………………………………………………………………………………………………

1. The algebraic reason that AB is perpendicular to BC

………………………………………………………………………………………………………………………

 (14 Marks)