WRITING, SIMPLIFYING AND ORDERING FUNCTIONS

Pearson Edexcel – Thursday 4 June 2020 - Paper 2 (Calculator) Higher Tier

1.

10 (a) Simplify $\left(\frac{1}{m^2}\right)^0$

.....

(1)

(b) Simplify $\frac{8(x-4)}{(x-4)^2}$

.....

(1)

(c) Simplify $(3n^4w^2)^3$

.....

(2)

(Total for Question 10 is 4 marks)

Pearson Edexcel – Monday 8 June 2020 – Paper 3(Calculator) Higher Tier

2.

1 (a) Simplify $n^3 \times n^5$

.....

(1)

(b) Simplify $\frac{c^3d^4}{c^2d}$

.....

(2)

(c) Solve $\frac{5x}{2} > 7$

.....

(2)

(Total for Question 1 is 5 marks)

Pearson Edexcel – Monday 8 June 2020 - Paper 3 (Calculator) Higher Tier

3.

12 (a) Express $\frac{x}{x+2} + \frac{2x}{x-4}$ as a single fraction in its simplest form.

.....

(3)

(b) Expand and simplify $(x - 3)(2x + 3)(4x + 5)$

.....

(3)

(Total for Question 12 is 6 marks)

Pearson Edexcel - Tuesday 21 May 2019 - Paper 1 (Non-Calculator) Higher Tier

4.

18 (a) Express $\sqrt{3} + \sqrt{12}$ in the form $a\sqrt{3}$ where a is an integer.

.....

(2)

(b) Express $\left(\frac{1}{\sqrt{3}}\right)^7$ in the form $\frac{\sqrt{b}}{c}$ where b and c are integers.

.....

(3)

(Total for Question 18 is 5 marks)

Pearson Edexcel - Tuesday 6 November 2018 - Paper 1 (Non-Calculator) Higher Tier

5.

20 Show that $\frac{(\sqrt{18}+\sqrt{2})^2}{\sqrt{8}-2}$ can be written in the form $a(b+\sqrt{2})$ where a and b are integers.

(Total for Question 20 is 3 marks)

Pearson Edexcel - Monday 12 November 2018 - Paper 3 (Calculator) Higher Tier

6.

9 (a) Expand and simplify $(x - 2)(2x + 3)(x + 1)$

.....

(3)

$$\frac{y^4 \times y^n}{y^2} = y^{-3}$$

(b) Find the value of n.

.....

(2)

(c) Solve $5x^2 - 4x - 3 = 0$
Give your solutions correct to 3 significant figures.

.....

(3)

(Total for Question 9 is 8 marks)

Pearson Edexcel - Tuesday 12 June 2018 - Paper 3 (Calculator) Higher Tier

7.

2 Expand and simplify $5(p + 3) - 2(1 - 2p)$

.....

(Total for Question 2 is 2 marks)

Pearson Edexcel - Thursday 2 November 2017 - Paper 1 (Non-Calculator) Higher Tier

8.

16 y is directly proportional to $\sqrt[3]{x}$

$y = 1\frac{1}{6}$ when $x = 8$

Find the value of y when $x = 64$

.....

(Total for Question 16 is 3 marks)

Pearson Edexcel - Thursday 8 June 2017 - Paper 2 (Calculator) Higher Tier

9.

11 Solve $\frac{3x-2}{4} - \frac{2x+5}{3} = \frac{1-x}{6}$

$x =$ .....

(Total for Question 11 is 4 marks)

Pearson Edexcel - Thursday 8 June 2017 - Paper 2 (Calculator) Higher Tier

10.

19 $2 - \frac{x+2}{x-3} - \frac{x-6}{x+3}$ can be written as a single fraction in the form $\frac{ax+b}{x^2-9}$ where a and b are integers.

Work out the value of a and the value of b.

$a =$ .....

$b =$ .....

(Total for Question 19 is 4 marks)

Pearson Edexcel - Specimen Papers Set 2 - Paper 1 (Non-Calculator) Higher Tier

11.

14 Show that $\frac{(4-\sqrt{3})(4+\sqrt{3})}{\sqrt{13}}$ simplifies to $\sqrt{13}$

(Total for Question 14 is 2 marks)

Pearson Edexcel - Specimen Papers Set 2 - Paper 1 (Non-Calculator) Higher Tier

12.

17 Solve $x^2 - 6x - 8 = 0$

Write your answer in the form $a \pm \sqrt{b}$ where a and b are integers.

.....

(Total for Question 17 is 3 marks)

Pearson Edexcel - Specimen Papers Set 2 - Paper 1 (Non-Calculator) Higher Tier

13.

20 Show that $\frac{3x + 6}{x^2 - 3x - 10} + \frac{x + 5}{x^3 - 25x}$ simplifies to $\frac{a}{x}$ where a is an integer.

(Total for Question 20 is 4 marks)

Pearson Edexcel - Specimen Papers Set 2 - Paper 2 (Calculator) Higher Tier

14.

3 (a) Expand and simplify $3(y - 2) + 5(2y + 1)$

.....

(2)

(b) Simplify $5u^2v^4 \times 7uv^3$

.....

(2)

(Total for Question 3 is 4 marks)

Pearson Edexcel - Specimen Papers Set 2 - Paper 2 (Calculator) Higher Tier

15.

18 Simplify fully $(\sqrt{a} + \sqrt{4b})(\sqrt{a} - 2\sqrt{b})$

.....

(Total for Question 18 is 3 marks)

Pearson Edexcel - Specimen Papers Set 1 - Paper 1 (Non-Calculator) Higher Tier

16.

15 Show that $\frac{2x^2 - 3x - 5}{x^2 + 6x + 5}$ can be written in the form $\frac{ax + b}{cx + d}$ where a, b, c and d are integers.

(Total for Question 15 is 3 marks)

Pearson Edexcel - Specimen Papers Set 1 - Paper 3 (Calculator) Higher Tier

17.

11 Write $x^2 + 2x - 8$ in the form $(x + m)^2 + n$
where m and n are integers.

(Total for Question 11 is 2 marks)

Pearson Edexcel - Specimen Papers Set 1 - Paper 3 (Calculator) Higher Tier

18.

14 Write

$$4 - \left[(x+3) \div \frac{x^2 + 5x + 6}{x - 2} \right]$$

as a single fraction in its simplest form.
You must show your working.

(Total for Question 14 is 4 marks)

Pearson Edexcel - Sample Paper 1 - (Non-Calculator) Higher Tier

19.

23 Show that $\dfrac{1}{1+\dfrac{1}{\sqrt{2}}}$ can be written as $2-\sqrt{2}$

(Total for Question 23 is 3 marks)

Pearson Edexcel - Sample Paper 2 - (Calculator) Higher Tier

20.

13 d is inversely proportional to c

When $c = 280$, $d = 25$

Find the value of d when $c = 350$

$d =$ .....

(Total for Question 13 is 3 marks)

Pearson Edexcel - Sample Paper 2 - (Calculator) Higher Tier

21.

16 Show that $\frac{1}{6x^2 + 7x - 5} + \frac{1}{4x^2 - 1}$ simplifies to $\frac{ax + b}{cx + d}$ where a, b, c and d are integers.

.....

(Total for Question 16 is 3 marks)

Pearson Edexcel - Thursday 26 May 2016 - Paper 1 (Non-Calculator) Higher Tier

22.

24 Given that $y \propto \frac{1}{x^2}$, complete this table of values.

x	1	2	5	10
y				1

(Total for Question 24 is 4 marks)

Pearson Edexcel - Thursday 9 June 2016 - Paper 2 (Calculator) Higher Tier

23.

24 (a) Simplify fully $\frac{3-x}{3x^2-5x-12}$

.....

(2)

(b) Write $\frac{x}{x-1}-\frac{x}{x+1}$ as a single fraction in its simplest form.

.....

(3)

(Total for Question 24 is 5 marks)

Pearson Edexcel - Friday 6 November 2015 - Paper 2 (Calculator) Higher Tier

24.

22 Alison is using the quadratic formula to solve a quadratic equation.
She substitutes values into the formula and correctly gets

$$x = \frac{-7 \pm \sqrt{49 - 32}}{4}$$

Work out the quadratic equation that Alison is solving.
Give your answer in the form $ax^2 + bx + c = 0$, where a, b and c are integers.

.....

(Total for Question 22 is 3 marks)

Pearson Edexcel - Thursday 4 June 2015 - Paper 1 (Non-Calculator) Higher Tier

25.

8 (a) Simplify $6g - 5h - 4g + 2h$

.....
(2)

(b) Factorise $y^2 - 2y$

.....
(1)

(c) Simplify fully $\frac{p^3 \times p^4}{p^2}$

.....
(2)

(Total for Question 8 is 5 marks)

Pearson Edexcel - Wednesday 5 November 2014 - Paper 1 (Non-Calculator) Higher Tier

26.

21 Expand $(1 + \sqrt{2})(3 - \sqrt{2})$

Give your answer in the form $a + b\sqrt{2}$ where a and b are integers.

.....

(Total for Question 21 is 2 marks)

Pearson Edexcel - Wednesday 5 November 2014 - Paper 1 (Non-Calculator) Higher Tier

27.

22 (a) Simplify fully $(3e)^0$

.....

(1)

(b) Simplify fully $\left(\frac{64x^6}{25y^2}\right)^{-\frac{1}{2}}$

.....

(2)

(c) Write $\frac{5}{x-3} - \frac{4}{x+3}$ as a single fraction in its simplest form.

.....

(3)

(Total for Question 22 is 6 marks)

Pearson Edexcel - Friday 13 June 2014 - Paper 2 (Calculator) Higher Tier

28.

24 p is inversely proportional to t.

When $t = 4$, $p = 12$

Find the value of p when $t = 6$

.....

(Total for Question 24 is 3 marks)

Pearson Edexcel - Wednesday 6 November 2013 - Paper 1 (Non-Calculator) Higher Tier

29.

21 y is directly proportional to the square of x.

When $x = 3$, $y = 36$

Find the value of y when $x = 5$

.....

(Total for Question 21 is 4 marks)

Pearson Edexcel - Friday 8 November 2013 - Paper 2 (Calculator) Higher Tier

30.

16 (a) Solve $5(f-3) = f+10$

.....

(3)

(b) Solve $\frac{h+7}{3} + \frac{2h-1}{2} = \frac{5}{6}$

.....

(4)

(Total for Question 16 is 7 marks)

Pearson Edexcel - Tuesday 11 June 2013 - Paper 1 (Non-Calculator) Higher Tier

31.

23 Simplify $\frac{4(x+5)}{x^2+2x-15}$

.....

(Total for Question 23 is 2 marks)

Pearson Edexcel - Friday 14 June 2013 - Paper 2 (Calculator) Higher Tier

32.

22 h is inversely proportional to the square of r.

When $r = 5$, $h = 3.4$

Find the value of h when $r = 8$

$h =$ .....

(Total for Question 22 is 3 marks)

Pearson Edexcel - Monday 6 June 2011 - Paper 3 (Non-Calculator) Higher Tier

33.

22. (a) Find the value of $27^{-\frac{2}{3}}$

.....

(2)

(b) Given that

$$\frac{8-\sqrt{18}}{\sqrt{2}} = a+b\sqrt{2}, \text{ where } a \text{ and } b \text{ are integers,}$$

find the value of a and the value of b.

$a =$ .....

$b =$ .....

(3)

(Total 5 marks)

Pearson Edexcel - Friday 12 November 2010 - Paper 4 (Calculator) Higher Tier

34.

25. (a) Expand and simplify $(2x + 4y)(4x - 5y)$

.....

(2)

(b) Simplify fully $\frac{(x+10)^5}{(x+10)^4}$

.....

(1)

(c) Simplify fully $\frac{x^2-25}{x^2+7x+10}$

.....

(3)

For all values of x, $x^2 + 6x - 2 = (x + p)^2 + q$

(d) Find the value of p and the value of q.

p = ... q = ...

(2)

(Total 8 marks)

Pearson Edexcel - Thursday 5 November 2009 - Paper 3 (Non-Calculator) Higher Tier

35.

21. Work out $(2 + \sqrt{3})(2 - \sqrt{3})$

Give your answer in its simplest form.

.....

(Total 2 marks)

OCR GSCE – Monday 9 November 2020 – Paper 6 (Calculator) Higher Tier

36.

18 Write $0.4\dot{1}\dot{6}$ as a fraction in its simplest form.
You must **show full working** in support of your answer.

..... **[3]**

OCR GSCE – Thursday 7 June 2018 – Paper 5 (Non - Calculator) Higher Tier

37.

1 **(a)** Calculate.

$$\frac{3}{5}+\frac{5}{8}$$

Give your answer as a mixed number in its simplest form.

(a) ..... **[3]**

(b) Work out.

$$5\times 10^{4}-1.6\times 10^{3}$$

Give your answer in standard form.

(b) ..... **[3]**

AQA GSCE – Thursday 4 June 2020 – Paper 2 (Calculator) Higher Tier

38.

1 Which of these is a correct identity?

Circle your answer.

[1 mark]

$x + 4x \equiv 5x$ $\quad$ $6x \equiv 18$ $\quad$ $2x + 1 \equiv 7$ $\quad$ $7x + 9 \equiv x$

AQA GSCE – Tuesday 21 May 2019 – Paper 1 (Non - Calculator) Higher Tier

39.

4 Circle the fraction that is equivalent to 4.625

[1 mark]

$\frac{39}{8}$ $\quad$ $\frac{37}{8}$ $\quad$ $\frac{185}{4}$ $\quad$ $\frac{17}{4}$

AQA GSCE – Tuesday 21 May 2019 – Paper 1 (Non - Calculator) Higher Tier

40.

19 Circle the fraction that is equivalent to $0.\dot{1}$

[1 mark]

$\frac{1}{9}$ $\quad$ $\frac{1}{99}$ $\quad$ $\frac{1}{10}$ $\quad$ $\frac{11}{100}$