POWERS AND ROOTS

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

1.

5 Here is a list of numbers.

$$3 \quad 4 \quad 9 \quad 18 \quad 27 \quad 30 \quad 36$$

From the numbers in the list, write down a cube number.

....

(Total for Question 5 is 1 mark)

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

2.

4 Work out 2.5^2

....

(Total for Question 4 is 1 mark)

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

3.

15 (a) Write down the value of $\sqrt{64}$

....

(1)

(b) Work out the value of 5^3

....

(1)

(Total for Question 15 is 2 marks)

Pearson Edexcel - Tuesday 11 June 2019 - Paper 3 (Calculator) Foundation Tier

4.

4 Here is a list of numbers.

| 4 | 6 | 9 | 10 | 15 | 27 | 30 | 40 |

From the list, write down all the numbers that are powers of 3

....

(Total for Question 4 is 1 mark)

Pearson Edexcel - Thursday 8 November 2018 - Paper 2 (Calculator) Foundation Tier

5.

2 Write down a square number that is also an odd number.

....

(Total for Question 2 is 1 mark)

6.

4 Work out the cube root of 64

....

(Total for Question 4 is 1 mark)

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

7.

3 Find $\sqrt{1.44}$

....

(Total for Question 3 is 1 mark)

Pearson Edexcel - Thursday 7 June 2018 - Paper 2 (Calculator) Foundation Tier

8.

3 Work out the value of 3^5

....

(Total for Question 3 is 1 mark)

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

9.

8 (a) Find the value of $\sqrt{1.44 \times 3.61}$

....

(1)

(b) Find the value of $(3.54 - 0.96)^2 - 4.096$

....

(2)

(Total for Question 8 is 3 marks)

Pearson Edexcel – Specimen 2 - Paper 1 (Non-Calculator) Foundation Tier

10.

3 (a) Work out $84 \div 3$

....

(1)

(b) Work out 0.17×6000

....

(1)

(c) Work out $(-2)^3$

....

(1)

(Total for Question 3 is 3 marks)

Pearson Edexcel – Specimen 2 - Paper 2 (Calculator) Foundation Tier

11.

4   Find the value of 5^4

....

(Total for Question 4 is 1 mark)

Pearson Edexcel – Specimen 2 - Paper 3 (Calculator) Foundation Tier

12.

9   (a) Find the value of $\sqrt[3]{97.336}$

....

(1)

(b) Find the value of $\sqrt{7.29} + (2.3 - 0.85)^2$

....

(2)

(Total for Question 9 is 3 marks)

Pearson Edexcel – Specimen 1 - Paper 1 (Non-Calculator) Foundation Tier

13.

5   Work out $(-3)^3$

....

(Total for Question 5 is 1 mark)

Pearson Edexcel – Specimen 1 - Paper 2 (Calculator) Foundation Tier

14.

15 (a) Work out $\frac{4}{5}$ of 210 cm.

.... cm

(1)

(b) Work out $(6 - 2.5)^2 + \sqrt{9.34 - 2.58}$

....

(2)

(Total for Question 15 is 3 marks)

Pearson Edexcel – Specimen 1 - Paper 3 (Calculator) Foundation Tier

15.

11 The same number is missing from each box.

$\boxed{} \times \boxed{} \times \boxed{} = 343$

(a) Find the missing number.

....

(1)

(b) Work out 4^4

....

(1)

(Total for Question 11 is 2 marks)

16.

12 Here are two numbers.

<div align="center">29   37</div>

Nadia says both of these numbers can be written as the **sum** of two square numbers.

Is Nadia correct?
You must show how you get your answer.

<div align="right">

(Total for Question 12 is 3 marks)

</div>

OCR – Tuesday 03 November 2020- Morning - Paper 1 (Calculator) Foundation Tier

17.

10 Nadia thinks of a number.
She finds the square root and then divides by 5.
Her answer is 20.

What number is she thinking of?

<div align="right">.. **[2]**</div>

18.

17 The table below shows the number of barrels of oil produced per day by some countries.

Country	Barrels of oil produced per day
USA	1.17×10^7
China	3.98×10^6
UK	9.39×10^5
Cameroon	9.32×10^4
Japan	3.92×10^3

(a) Write the number of barrels of oil produced per day by Cameroon as an ordinary number.

(a) .... [1]

(b) How many more barrels of oil per day did China produce than the UK?
Give your answer in standard form, correct to 3 significant figures.

(b) .... [4]

(c) Jamal says the USA produced approximately three times more barrels of oil than Japan.

Is he correct?
Show how you decide.

Jamal is .... because ....

.... [2]

OCR Thursday 05 November 2020- Morning (Non-Calculator) Foundation Tier

19.

8 (a) Write $3 \times 3 \times 3 \times 3$ as a power of 3.

(a) .... [1]

(b) Show that the answer to $2^6 \times 4^{-1}$ is a square number.

.... [3]

OCR November 09 November 2020- Morning (Calculator) Foundation Tier

20.

12 (a) Complete the power of 2 for each statement by writing the missing value in the box.

(i) $2^3 \times 2^3 = 2^{\boxed{}}$ [1]

(ii) $\dfrac{1}{32} = 2^{\boxed{}}$ [1]

(b) $2 \times 2^y = 1$.

Find the value of y.

(b) $y =$ .... [2]
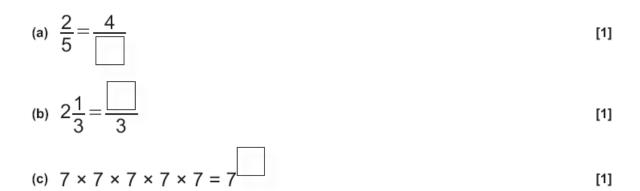
OCR Thursday 07 November 2019- Morning (Non-Calculator) Foundation Tier

21.

3 Complete each statement by writing the missing value in the box.

(a) $\dfrac{2}{5} = \dfrac{4}{\boxed{}}$

[1]

(b) $2\dfrac{1}{3} = \dfrac{\boxed{}}{3}$

[1]

(c) $7 \times 7 \times 7 \times 7 \times 7 = 7^{\boxed{}}$

[1]

OCR Monday 11 November 2019 – Afternoon (Calculator) Foundation Tier

22.

12 (a) Find the value of

(i) $\sqrt[3]{216}$,

(a)(i) .... [1]

(ii) 2^8.

(ii) .... [1]

(b) The cube of 3 is added to the square root of 7.

Put a ring around the correct statement.

$\sqrt[3]{3} + 7^2$ $3^3 + 7^2$ $3^3 + \sqrt{7}$ $\sqrt[3]{3} + \sqrt{7}$

[1]

OCR Tuesday 21 May 2019 – Morning (Calculator) Foundation Tier

23.

2 (a) Write down each of the following.

(i) An odd number.

(a)(i) .... [1]

(ii) A factor of 25.

(ii) .... [1]

(iii) A prime number between 20 and 30.

(iii) .... [1]

(b) Show that 55 is **not** a square number. [2]

24.

14 (a) (i) Round 356 to the nearest ten.

(a)(i) .... [1]

(ii) Round 356.052 to 1 decimal place.

(ii) .... [1]

(b) Find the value of y in each of the following.

(i) $3 \times 3 \times 3 \times 3 = 3^y$

(b)(i) $y = $ .... [1]

(ii) $6^3 \times 6^5 = 6^y$

(ii) $y = $ .... [1]

OCR Thursday 6 June 2019 – Morning (Non-Calculator) Foundation Tier

25.

5 (a) Complete the following.

(i) $5^2 = $ .... [1]

(ii) $\sqrt[3]{64} = $ .... [1]

(b) Work out $2^3 \times \sqrt{49}$.

(b) .... [2]

26.

4 (a) Write down each of the following.

(i) An even number.

(a)(i) .... [1]

(ii) A factor of 25.

(ii) .... [1]

(iii) A prime number between 10 and 20.

(iii) .... [1]

(iv) A cube number.

(iv) .... [1]

(b) Find the highest common factor (HCF) of 35 and 91.

(b) .... [2]

27.

7 **(a)** Write down the value of $\sqrt[3]{27}$.

(a) .... [1]

(b) Work out 7^2.

(b) .... [2]

(c) Write 6^{-1} as a fraction.

(c) .... [1]

28.

13 **(a)** Write 0.003 16 in standard form.

(a) .... [1]

(b) Work out.

$$2 \times 10^2 \times 4 \times 10^5$$

Give your answer in standard form.

(b) .... [2]

29.

4   Tia thinks of a number.
She finds the square root and subtracts 4.
Her answer is 1.

What number is she thinking of?

.... [2]

30.

13 **(a)** Work out 2^4.

(a)   .... [2]

(b) Find the value of n.

$$100 = 4 \times 5^n$$

(b) $n =$ .... [2]

31.

1   Here is a list of numbers.

                          2   8   5   12   6

(a) From this list, write down

   (i)   the odd number,

                                      (a)(i)   .... [1]

   (ii)   the cube number.

                                      (ii)   .... [1]

(b) Using the same list of numbers, work out

   (i)   the median,

                                      (b)(i)   .... [1]

   (ii)   the range.

32.

4   Patrick writes down a number.

   He says

            If I find the square root of that number and then add 15, I get 27.

   What number did Patrick write down?

                                      .... [2]

33.

3 **(a)** Work out.

(i) 10^3

(a)(i) .... **[2]**

(ii) $9(8 - 3 \times 2)$

(ii) .... **[2]**

(b) Put brackets into this sum so that the answer is correct.

$1 + 2 \times 3 + 5 = 17$ **[1]**

34.

2 **(a)** Write down.

    (i) 3091 rounded to the nearest hundred

                                              (a)(i) .... **[1]**

    (ii) 3% as a decimal

                                              (ii) .... **[1]**

    (iii) the cube root of 27

                                              (iii) .... **[1]**

(b) Complete the statement below using a number from this list.

        $^-2$ 0 $^-6$ 6

                                      $-5 >$ .... **[1]**

(c) Write the following numbers in order of size, smallest first.

    0.4   0.5   0.06   0.444   0.46

        .... **[2]**
        smallest

35.

3   Calculate.

(a) $\dfrac{3.6}{1.2-0.3}$

(a)   .... [1]

(b) $\sqrt{12.25^{3}}$
      Give your answer correct to 1 decimal place.

(b)   .... [2]

36.

20 **(a)** Show that $a^5 \times (a^3)^2$ can be expressed as a^{11}. [2]

(b) Write $\dfrac{1}{125} \times 25^9$ as a power of 5.

(b) .... [3]

OCR Thursday 2 November 2017– Morning (Calculator) Foundation Tier

37.

3 **(a)** Round 7874 to

(i) the nearest hundred,

(a)(i) .... [1]

(ii) 1 significant figure.

(ii) .... [1]

(b) Find the value of x.

$$3^5 \times 3^2 = 3^x$$

(b) $x =$ .... [1]

38.

7 **(a)** Work out.

(i) $1 + 4 \div 2$

(a)(i) .... [1]

(ii) $2 + 5 \times (8 - 4)$

(ii) .... [1]

(b) Evaluate.

(i) 2^5

(b)(i) .... [1]

(ii) $\sqrt{400}$

(ii) .... [1]

(c) Estimate the value of

$$\frac{23.1 \times 3.9}{8.12}.$$

(c) .... [3]

OCR Monday 6 November 2017– Morning (Calculator) Foundation Tier

39.

17 Andrew is thinking of a number.

- It is between 1 and 150.
- It is one more than a square number.
- It is three less than a cube number.
- It is not a prime number.

What is Andrew's number?
You must show all your reasoning.

Pearson Edexcel –Sample Papers - Paper 2 (Calculator) Foundation Tier

40.

3 Here is a list of numbers

$$4 \quad 7 \quad 9 \quad 25 \quad 27 \quad 31 \quad 64$$

From the numbers in the list, write down a cube number.

....

(Total for Question 3 is 1 mark)

41.

4 Find the value of $(2.8 - 0.45)^2 + \sqrt[3]{5.832}$

....

(Total for Question 4 is 2 marks)

42.

4 (a) Fill in each missing number.

   (i)   24 – .... = 36   [1]

   (ii) $\sqrt{\text{........................}}$ = 16   [1]

(b) The length of a line is 10.4 cm, correct to 1 decimal place.

   Write down the shortest possible length of the line.

                                                  (b)   .... cm [1]

43.

8 **(a)** Evaluate.

    (i) $\sqrt{121}$

                                                       (a)(i) .... **[1]**

    (ii) 4^{-2}

                                                       (ii) .... **[1]**

(b) Work out.

    $(9-3\times2)^{2}$

                                                       (b) .... **[2]**

(c) Fill in the power.

    $5^{\boxed{}} = 125$ **[1]**

44.

10 Calculate.

(a) $\sqrt{3136}$

(a) .... [1]

(b) $\sqrt[4]{625}$

(b) .... [1]

(c) 5^{-2}

(c) .... [1]

45.

8 (a) Write down an even whole number that is also a square number.

[1 mark]

Answer _____

8 (b) Write down **all** the cube numbers between 100 and 400

[2 marks]

_____

_____

_____

Answer _____

8 (c) Write down **two** numbers that
are multiples of 3
and
multiply to make 216

[1 mark]

_____

_____

_____

_____

_____

_____

Answer _____ and _____

AQA Thursday 6 June 2019 – Morning (Calculator) Foundation Tier

46.

1   Circle the number that is one **less** than a cube number.

[1 mark]

20   22   24   26

AQA Thursday 11 June 2019 – Morning (Calculator) Foundation Tier

47.

20   Solve $x^2 = 196$

[2 marks]

_____

_____

_____

Answer _____

AQA Tuesday 6 November 2018 – Morning (Non-Calculator) Foundation Tier

48.

29 $\sqrt{6^2 + 8^2} = \sqrt[3]{125a^3}$

Work out the value of a.

[4 marks]

_____

_____

_____

_____

_____

_____

Answer _____

AQA Monday 12 November 2018 – Morning (Calculator) Foundation Tier

49.

11   Circle the cube number.

[1 mark]

       9   10 000   333   729

AQA Thursday 7 June 2018 – Morning (Calculator) Foundation Tier

50.

3   What is 625 as a power of 5 ?
Circle your answer.

[1 mark]

      5^3 5^4 5^5 5^{125}

51.

5   Work out the value of $3^6 - \sqrt{841}$

[2 marks]

Answer _____

52.

20 n is an odd number.

p is a prime number.

In each part write down possible values of n and p so that

20 (a) $n + p$ is a square number.

[1 mark]

_____

_____

_____

$n =$ _____ $p =$ _____

20 (b) np is a square number.

[1 mark]

_____

_____

_____

$n =$ _____ $p =$ _____

53.

29   Work out the value of $\left(\sqrt{3}\right)^2 \times \left(\sqrt{2}\right)^2$

[2 marks]

_____

_____

_____

Answer _____

AQA Monday 6 November 2017 – Morning (Calculator) Foundation Tier

54.

2   Which of these numbers is **half** of a square number?
Circle your answer.

[1 mark]

        1   2   3   4

55.

12   Work out $\sqrt{7.5^2 + 18^2}$
Circle your answer.

[1 mark]

    19.5   25.5   331.5   380.25

AQA Wednesday 8 November 2017 – Morning (Calculator) Foundation Tier

56.

1   Circle the cube number.

[1 mark]

100   1000   10 000   100 000

AQA Wednesday 8 November 2017 – Morning (Calculator) Foundation Tier

57.

23   Show that 268 can be written as the sum of a power of 3 and a square number.

[2 marks]

_____

_____

_____

_____

_____

_____

Answer _____

AQA Tuesday 13 June 2017 Morning– Morning (Calculator) Foundation Tier

58.

4   Circle the value of 2^5

[1 mark]

10   25   32   64

59.

3   Which of these is a cube number?

Circle your answer.

[1 mark]

3   9   27   100

60.

18   Work out the square root of 100 million.

Circle your answer.

[1 mark]

1000   10 000   100 000   1 000 000