Algebra – 2021/20 GCSE Mathematics Foundation

1. Nov/2021/Paper_J560/01/No.7

Solve.

(a) $x - 14 = 30$

(a) $x =$ ..... **[1]**

(b) $6y + 7 = 28$

(b) $y =$ ..... **[2]**

2. Nov/2021/Paper_J560/01/No.9

A student thinks of a number.
They square it and then add 6.
Their answer is 295.

What number is the student thinking of?

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

3. Nov/2021/Paper_J560/01/No.10

(a) Simplify.

$3c^2d \times 2d$

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

(b) Factorise.

$35x + 7x^2$

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

4. Nov/2021/Paper_J560/01/No.14

(a) Here are the first four terms of a sequence.

8 15 22 29

(i) Write down the next term in the sequence.

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

(ii) Explain how you worked out your answer.

..... **[1]**

(b) The nth term of a **different** sequence is given by $4n+2$.

Explain why 32 is **not** a term in this sequence.

.....

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

5. Nov/2021/Paper_J560/01/No.22

Kai buys 5 drinks and 3 cakes for £16.35.
Azmi buys 2 drinks and 6 cakes for £14.70.

Assume that each drink costs the same and that each cake costs the same.

Calculate the cost of one drink and the cost of one cake.
You must show your working.

Cost of one drink £ .....

Cost of one cake £ ..... **[5]**

6. Nov/2021/Paper_J560/02/No.15

Solve the inequality.

$2(x+5) < 16$

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

7. Nov/2021/Paper_J560/03/No.8

Simplify.

$5t - 3u - t + 5u$

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

8. Nov/2021/Paper_J560/03/No.11

Here are some algebraic statements.

$v = u + at$ $a + 2b$ $3(x + 2) = 3x + 6$ $2y < x$ $2x = 5$

From the list above, write down an example of each of the following.

(a) An expression.

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

(b) An inequality.

(b) ..... **[1]**

(c) An equation.

(c) ..... **[1]**

9. Nov/2021/Paper_J560/03/No.12

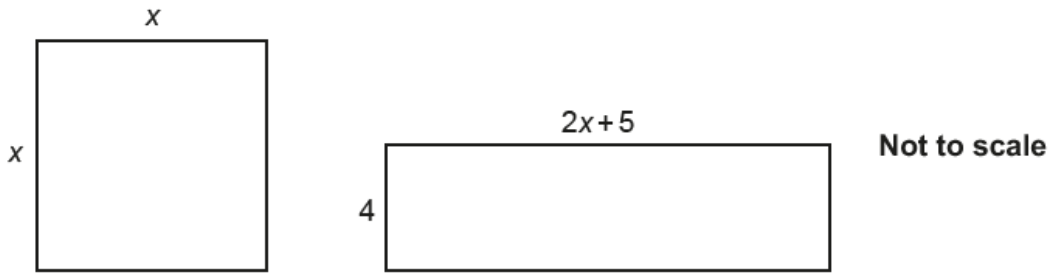
Rearrange this formula to make w the subject.

$P = 2w + 2h$

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

10. Nov/2021/Paper_J560/03/No.22

In this question, all measurements are in centimetres.



Not to scale

The square and the rectangle have the same area.

(a) Show that $x^2 - 8x - 20 = 0$. **[3]**

(b) Solve $x^2 - 8x - 20 = 0$.

(b) $x =$ ..... or $x =$ ..... **[3]**

(c) Explain why one of the answers in part **(b)** is not possible in the context of the question.

.....

..... **[1]**

(d) Write down the following.

(i) The area of the square.

(d)(i) ..... cm^2 **[1]**

(ii) The length of the rectangle.

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

11. Nov/2020/Paper_J560/01/No.8

Yoghurts are packed in trays.
Each tray holds 12 yoghurts.

What is the smallest number of trays needed to pack 460 yoghurts?

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

12. Nov/2020/Paper_J560/01/No.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?

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

13. Nov/2020/Paper_J560/01/No.12

(a) A train is travelling with a velocity of 15 m/s.
It then accelerates at 0.5 m/s^2 for 6 seconds.

Use the formula $v = u + at$ to calculate the velocity of the train after the 6 seconds.

(a) ..... m/s **[2]**

(b) Rearrange the formula $v = u + at$ to make a the subject.

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

14. Nov/2020/Paper_J560/01/No.13

Choose a word from this list that best describes each statement.

Identity Expression Formula Term Equation

(a) $8 = n + 2$ **(a)** ..... **[1]**

(b) $3x + 2y$ **(b)** ..... **[1]**

(c) $(a + b)(a - b) = a^2 - b^2$ **(c)** ..... **[1]**

15. Nov/2020/Paper_J560/01/No.15

(a) Solve.

$\frac{x}{2} + 5 = 15$

(a) $x =$ ..... **[2]**

(b) Factorise.

$5a^2 - 10a$

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

(c) Solve by factorising.

$x^2 + 15x + 56 = 0$

(c) $x =$ ..... or $x =$ ..... **[3]**

16. Nov/2020/Paper_J560/02/No.15

(a) Simplify.

$4a - 2b - 2a + 5b$

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

(b) **(i)** Multiply out.

$4(x + 3)$

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

(ii) Multiply out and simplify.

$(x + 5)(x - 2)$

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

17. Nov/2020/Paper_J560/02/No.21

Solve the simultaneous equations.

$2x + 3y = 10$
$3x + 5y = 17$

$x =$ .....

$y =$ ..... **[4]**

18. Nov/2020/Paper_J560/03/No.2

(a) Complete the first seven square numbers.

1 4 9 16 ..... 36 49 **[1]**

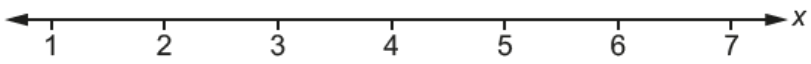
(b) Write the missing term in each sequence.

(i) 18 16 14 ..... 10 8 **[1]**

(ii) ..... 14 20 26 32 38 **[1]**

19. Nov/2020/Paper_J560/03/No.16

Solve $3x + 4 < 19$.
Show your solution on the number line.



[4]

20. Nov/2020/Paper_J560/03/No.11

$5(2x+1)+c(x+d)=12x-1$

Work out the value of c and the value of d.

$c =$ .....

$d =$ ..... **[5]**

21. Nov/2020/Paper_J560/01/No.24

Lily buys and sells microwaves.

She buys each one for £32 and sells it for £60.
She also pays £7 for the delivery of each microwave she sells.

If she sells a microwave that is faulty then Lily must pay for its repair and redelivery. This costs her another £25 for each faulty microwave.

Last month, 6 out of the 80 microwaves Lily sold were faulty.

This month she has orders for 133 microwaves.

Calculate her expected percentage profit on this month's order.
Showing your working in the boxes below may help you present your work.

Expected number of faulty microwaves:	Expected costs:
Income from sales:	Expected percentage profit:

..... % **[6]**