

11+ Maths Revision & Practice

Expressions, Equations and Substitutions Test

Instructions:

1. The total time allowed is 10 minutes.
2. There is a total of 15 marks available.
3. The available marks for each question are mentioned next to the question.
4. Write your answers in the space or box provided below each question.
5. For multiple-choice questions, choose the correct option from A to E.

Symbols used:



Go to the next page.



Do not turn the page
until told to do so.



Stop working and await
instructions.

1 If $x = 5$, $y = 2$ and $z = 6$, find $2x \div y + 0.3z^2$

- A. 16.8
- B. 15.8
- C. 18.8
- D. 22.8
- E. 20.8

(1)



2 Multiply the brackets and simplify:

$$2(a + 5b) ; 6(3a + 2b) - 4b ; 3(2a + 4b) - (a + 2b)$$

(1)

- A. $2a + 10b ; 18a + 8b ; 5a + 10b$
- B. $2a + 12b ; 18a - 8b ; 5a + 10b$
- C. $2a + 10b ; 16a - 8b ; 5a + 10b$
- D. $2a + 10b ; 18a + 8b ; 8a + 10b$
- E. $4a + 10b ; 18a - 8b ; 5a + 10b$



3 What is the value of P when Q = 5, R = 2 and the required output is 2?

$$\frac{P + Q}{3} - \frac{P + R}{4} = 2$$

(1)

- A. 8
- B. 10
- C. 12
- D. 13
- E. 14



4

In this question, $S(n) = 0.5n^2 + 0.5n$, $S(n)$ is the sum of all the numbers from 1 to n . Using the above equation, find the sum of numbers from 6 to 20.

- A. 155
- B. 150
- C. 195
- D. 185
- E. 210

(1)



- 5 Jason buys m apples that cost 20p each. Jason eats 2 of them and sells the rest for 35p each. What is his profit in pence?

(1)



- 6 The length of this rectangle is $2x$ and the area is $2x^2 + 4x$. What is the width of the rectangle?



(1)



7 Here are some expressions,

- a) $11x - 4$
b) $23y + 2$
c) $10x - 3y + 10$

(4)

[A]	[B]	[C]	[D]	[E]	[F]
41	$21x + 20y + 8$	$x + 3y - 14$	$21x - 20y - 10$	28	$22x + 46y - 4$

a) The sum of a, b and c is _____.

b) The difference between a and c is _____.



c) Twice the sum of a and b is _____.

d) If $x = 1$ and $y = 2$, the range is _____.



8

Sally thinks of a number.

She calls her number p .

Then she multiplies her number by 10, and then subtracts 6.

Her answer is 24.

Use this information to write down an equation for the number p .

.....

(1)



9 Stephan wants to hire a taxi. The company charges a fixed charge of £14 plus rental charge of £3 per km.

(2)

(a) Using C for the total cost in pounds and D for the distance travelled in km, write an equation to calculate the cost of hiring a taxi.

.....

(b) Calculate the cost of hiring a taxi for 100 km.

.....



- 10** Haley discovers a method to find the height of buildings. She drops a ball from the top of the building and measures the time it takes for the ball to reach the ground as t seconds.

(2)

The height of the building, h metres, is given by the calculation

$$h = 0.5 \times g \times t^2$$

where, the value of g is 9.8 m/s^2 .

Find the height of the building if $t = 10$ seconds.

..... m



CHALLENGING QUESTION

Question: On planet Eon, the symbol \boxplus has a special meaning in arithmetic.

$a \boxplus b$ means multiply a by 10, then add 4 times b .

$$\begin{aligned} \text{For example, } 2 \boxplus 3 &= 2 \times 10 + 4 \times 3 \\ &= 20 + 12 \\ &= 32 \end{aligned}$$

(a) Work out $y \boxplus 4$.

.....

(b) Work out $m \boxplus (2 \boxplus m)$.

.....

(c) Use your answer from part (b) to find the value of $1 \boxplus (2 \boxplus 1)$.

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