

Expressions, equations and inequalities – Checkpoint Sec 1 Math**1. No.13**

Simplify these expressions.

$$9x + 2y - 4x - 8y$$

.....

$$3 + 2(5x - 6)$$

.....

[3]

2. No.23

Solve these simultaneous equations.

$$5x + 2y = 26$$

$$10x - y = 37$$

Use an algebraic method to work out your answer.

$$x = \text{.....}$$

$$y = \text{.....} [3]$$

3. No.14

One solution of the equation

$$x^2 + 4x = 63$$

lies between 6 and 7

Use the method of trial and improvement to find this solution correct to 1 decimal place.

Show all your working in the table.

You may not need to use all the rows.

x	$x^2 + 4x$	Too big or too small ?
6	60	Too small
7	77	Too big

 $x =$ [3]

4. No.4

Solve.

$$17 - 3x = 2$$

$$x = \text{.....} [2]$$

5. No.4

Write an integer on each line to complete the equation.

$$7x + \text{.....} + \text{.....}x - 6 = 9x - 3$$

[2]

6. No.15

(a) Here is a table showing some algebraic expressions and what they mean in words.

Complete the table.

One has been done for you.

Algebraic expression	Meaning in words
$5x - 4$	Multiply x by 5 then subtract 4
	Add 3 to x then divide by 7
$9(x + 2)$	 then

[2]

(b) Samira writes an algebraic expression which means

subtract 6 from x then square.

Write down the algebraic expression.

..... [1]

7. No.17

Write a **positive** number in each box to make each statement true.

$$0.8 \quad \times \quad \boxed{} \quad < \quad 0.8$$

$$1.3 \quad \div \quad \boxed{} \quad < \quad 1.3$$

$$8 \quad \div \quad \boxed{} \quad > \quad 80$$

[2]

8. No.21

Use the method of trial and improvement to find the solution of

$$x^3 + 3x = 20$$

Find the value of x correct to one decimal place.

You must show all your working.

You may not need to use all the rows in the table.

x	$x^3 + 3x$	
2	14	

 $x = \text{.....}$ [3]

9. No.1

Here is a list of symbols.

< > =

Choose the correct symbol from the list for each of these statements.

3.7 3.65

4.035 4.34

7.6 7.60

[1]

10. No.3

Solve.

$$5x - 2 = 3(x + 4)$$

 $x =$ [3]

11. No.21

(a) Solve the inequality.

$$19 \leq 7 - 3x$$

..... [2]

(b) Represent the range of values for x on the number line.

[1]

12. No.8

Angelique is n years old.

Jamila says,

‘To get my age, start with Angelique’s age, add one and then double.’

Write an expression, in terms of n , for Jamila’s age.

..... [1]

13. No.7

Draw a ring around the point which does **not** lie on the line $y = 3x + 2$

(2, 8) (0, 4) (100, 302) (9, 29)

[1]

14. No.21

Use a trial and improvement method to find an approximate positive solution to this equation.

$$x^2 - 3x = 50$$

Give your answer correct to one decimal place.

You may not need all the rows.

One value has been done for you.

x	$x^2 - 3x$	Too big or too small?
10	70	too big

$x =$ [3]

15. No.25

The table shows the ages of a group of boys and girls.

Age (in years)	Number of boys	Number of girls
10	8	8
11	7	10
12	8	14
13	12	6
14	0	2
15	0	2
16	10	0
17	6	0

Tick (✓) to show if these statements are true or false.

	True	False
There are more girls aged 12 years than boys aged 12 years.	☐	☐
The range of ages for the boys is higher than the range of ages for the girls.	☐	☐

[1]

16. No.5

Chen rolls a dice and records the score each time.

The results are shown in the table.

Score	Frequency
1	9
2	14
3	2
4	12
5	8
6	5

Calculate his mean score.

..... [2]

17. No.22

The table shows the mean and range of the number of customers at a restaurant on Mondays and Thursdays.

	Mean	Range
Mondays	34	14
Thursdays	41	20

The restaurant manager says,

‘The number of customers on Mondays is less variable than on Thursdays.’

Explain why the manager is correct.

..... [1]

18. No.14

Expand and simplify.

$$(x - 6)(x + 5)$$

..... [2]

19. No.4

Write one of the signs

< = >

in each box to make a correct statement.

$$0.04 \quad \square \quad 0.040$$

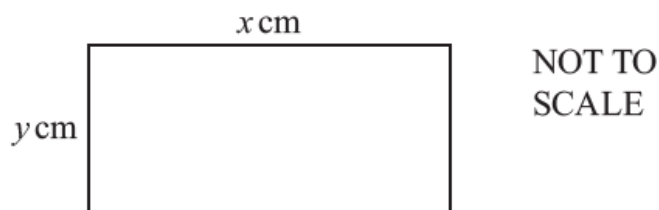
$$0.44 \quad \square \quad 0.044$$

$$0.404 \quad \square \quad 0.44$$

[2]

20. No.13

The diagram shows a rectangle of length x cm and width y cm.



(a) Write down an equation that shows the perimeter of the rectangle is 65 cm.

..... [1]

(b) Write down an equation that shows the length of the rectangle is 4 times the width.

..... [1]

(c) Use your equations to work out the value of x .

$x =$ [2]

21. No.1

Work out the value of y .

$$6 \times 3 + y = 23$$

$$y = \dots\dots\dots [1]$$

22. No.5

Choose either $\times$ or $\div$ to make each calculation correct.

$$14 \dots\dots\dots 0.2 = 70$$

$$16 \dots\dots\dots 1.25 = 20$$

$$20 \dots\dots\dots 0.5 = 10$$

$$36 \dots\dots\dots 0.75 = 48$$

[2]

23. No.11

Pierre is solving the equation

$$x^2 + 4x = 56$$

using a trial and improvement method.

The table shows some of his working.

x	$x^2 + 4x =$	Too big or too small?
5	45	Too small
6	60	Too big
5.6	53.76	Too small
5.7	55.29	Too small
5.8	56.84	Too big
5.75		

(a) Complete the final row of the table.

[1]

(b) Write down the solution to the equation $x^2 + 4x = 56$ correct to one decimal place.

$x =$ [1]

24. No.12

Anastasia is a years old, Blessy is b years old and Manjit is m years old.

(a) Blessy is older than Manjit.

Draw a ring around the correct inequality.

$b > m$

$b \geq m$

$b < m$

$b \leq m$

[1]

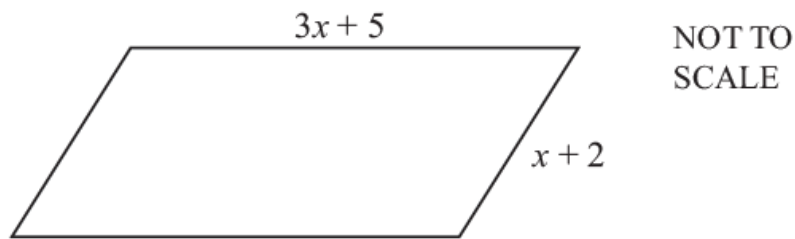
(b) Anastasia is less than half the age of Blessy.

Write this statement as an inequality.

..... [1]

25. No.11

The diagram shows a parallelogram.
All sides are measured in centimetres.



(a) Write down an expression, in terms of x , for the perimeter of the parallelogram.

..... cm [1]

(b) The perimeter of the parallelogram is 62 cm.

Work out the length of the **longest side** of the parallelogram.

..... cm [3]

26. No.17

Solve the simultaneous equations using an algebraic method.

$$x + 2y = 13$$

$$3x + y = 24$$

You **must** show how you worked out your answers.

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots [3]$$

27. No.21

The equation $x^2 + 8x = 144$ has a solution between $x = 8$ and $x = 9$

Use the method of trial and improvement to find the solution correct to one decimal place.
Show all your working in the table.

You may not need to use all the rows.

x	$x^2 + 8x$	Comment
8	$8^2 + 8 \times 8 = 128$	Too small
9	$9^2 + 8 \times 9 = 153$	Too big

$x =$ [3]

28. No.10(a)

(a) Factorise completely.

$$2x^2 - 6x$$

..... [2]

29. No.2

Solve the equation.

$$3r + 7 = 34$$

$$r = \dots\dots\dots [2]$$

30. No.28

Solve these simultaneous equations.

$$m + 3n = 1$$

$$2m - n = 16$$

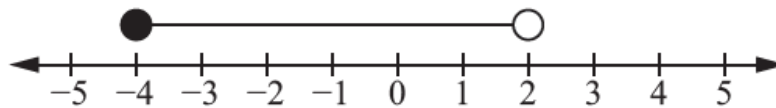
Use an algebraic method to work out your answer.

$$m = \dots\dots\dots$$

$$n = \dots\dots\dots [3]$$

31. No.20

(a) Draw a ring around the inequality represented on the number line.



$-4 \leq x < 2$

$-4 < x < 2$

$-4 < x \leq 2$

$-4 \leq x \leq 2$

[1]

(b) Solve the inequality.

$$\frac{y}{6} > 1.5$$

[1]

32. No.23

One solution of the equation

$$x^3 - 2x = 40$$

lies between 3 and 4

Use the method of trial and improvement to find this solution to one decimal place.

Show all your working in the table.

You may not need to use all the rows.

x	$x^3 - 2x$	Too big or too small?
3	21	Too small
4	56	Too big

 $x =$ [3]

33. No.13(b)

(b) $(x+5)(x-4) = 286$

Use trial and improvement to find the positive solution of this equation.
Show your trials in the table.

You may not need all the rows.

One value has been done for you.

x	$(x+5)(x-4)$
10	90

$x =$ [2]