High School
Mathematics Test 2015

Year 8

Equations

Non Calculator Section

Name_____

Skills and Knowledge Assessed:

- Solve simple linear equations (ACMN A179)
- Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution (ACMNA194)

Answer all questions in the spaces provided on this test paper by:

Writing the answer in the box provided.

or

Shading in the bubble for the correct answer from the four choices provided.

Show any working out on the test paper. Calculators are **not** allowed.

1. What number is missing from the sentence?

$\square - 14 = 10$

☐ 4 ☐ 16 ☐ 24 ☐ 240

2. Give the solution to:

$m + 9 = 17$ $m =$ ☐

3. Which is the correct solution to:

$4p = 48$

☐ $p = 8$ ☐ $p = 12$ ☐ $p = 16$ ☐ $p = 44$

4. Give the solution to:

$\frac{e}{3} = 18$ $e =$ ☐

5. Solve $6x - 9 = 21$

$x =$ ☐

6. What number is missing from the sentence?

$4 \times \square + 7 = 11$

☐ -1 ☐ 0 ☐ 1 ☐ $4\frac{1}{2}$

7. What number is missing from the sentence?

$5 \times (\square + 1) = 25$

☐ 1 ☐ 4 ☐ 5 ☐ 6

8. Which line in the solution to the equation $7x = 3x + 12$ contains an error?

$7x = 3x + 12$

Line 1 $7x + 3x = 12$

Line 2 $10x = 12$

Line 3 $x = \frac{12}{10}$

Line 4 $x = 1\frac{1}{5}$

☐ Line 1 ☐ Line 2 ☐ Line 3 ☐ Line 4

9. Solve $3x = 20 - x$

☐ $x = 2$ ☐ $x = 3$ ☐ $x = 4$ ☐ $x = 5$

10. Test the possible solutions below to find the correct solution to the equation :

$12 - \frac{k}{7} = 7$

☐ $k = 21$ ☐ $k = 28$ ☐ $k = 35$ ☐ $k = 42$

High School
Mathematics Test 2015

Equations

Year 8

Calculator Allowed
Short Answer
Section

Name_____

Answer all questions in the spaces provided on this test paper by:

Writing the answer in the box provided.

or

Shading in the bubble for the correct answer from the four choices provided.

Show any working out on this test paper. Calculators are allowed.

1. Which calculation could be used to find the solution to the equation $m - 2.8 = 1.6$?

☐ $m = 1.6 - 2.8$ ☐ $m = 1.6 + 2.8$

☐ $m = 1.6 \times 2.8$ ☐ $m = 1.6 \div 2.8$

2. Give the solution to:

$d + 2.6 = 4.2$ $d =$ ☐

3. Which is the correct solution to:

$y - 458 = 583$

☐ $y = 125$ ☐ $y = 135$ ☐ $y = 931$ ☐ $y = 1041$

4. Solve: $36w = 648$

$w =$ ☐

5. Solve: $12m - 15 = -3$

$m =$ ☐

6. Solve the equation $\frac{8g}{3} = -16$.

☐ $g = -6$ ☐ $g = -3$ ☐ $g = -2$ ☐ $g = 6$

7. Which is the correct solution to the equation :

$$\frac{s}{5} - 7 = -3$$

☐ $s = 2$ ☐ $s = 5$ ☐ $s = 10$ ☐ $s = 20$

8. Which line in the solution to the equation $\frac{m+4}{3} = 12$ contains an error?

$$\frac{m+4}{3} = 12$$

Line 1 $m + 4 = 12 \times 3$

Line 2 $m + 4 = 36$

Line 3 $m = 36 + 4$

Line 4 $m = 40$

☐ Line 1 ☐ Line 2 ☐ Line 3 ☐ Line 4

9. Which is the solution to $8z = 3z - 55$?

☐ $z = -11$ ☐ $z = -5$ ☐ $z = 5$ ☐ $z = 11$

10. Solve $6(m - 3) = -6$

$m =$ ☐

High School
Mathematics Test 2015

Year 8	*Equations*	Calculator Allowed Longer Answer Section

Name_____

Write all working and answers in the spaces provided on this test paper.
Marks may not be awarded if working out and/or answers are not clear.
Marks allocated are shown beside each question.
Calculators are allowed.

1. Solve the equations below, showing all steps of working, regardless of the method used.

		Marks			Marks
a)	$9m + 3 = 30$ _____ _____ _____	**2**	b)	$4(a + 7) = 24$ _____ _____ _____	**2**
c)`	$5s = 21 - 2s$ _____ _____ _____	**2**	d)	$\frac{e}{5} - 6 = 1$ _____ _____ _____	**2**

2. Solve the equations below, showing all steps of working, regardless of the method used.

Marks

a) $8y - 7 = 17 + 5y$ 3

b) $\frac{5p - 3}{4} = -7$ 3

c) $5(7 - 2a) = 20$ **3**

d) $\frac{5w}{4} + 7 = 17$ **3**

High School
Mathematics Test 2015

Year 8

Equations

Non Calculator Section

ANSWERS

No.	WORKING	ANSWER
1.	$\square - 14 = 10$ $\square = 10 + 14$ $= 24$	3rd answer
2.	$m + 9 = 17$ $m = 17 - 9$ $m = 8$	$m = 8$
3.	$4p = 48$ $p = \frac{48}{4}$ $p = 12$	2nd answer
4.	$\frac{e}{3} = 18$ $e = 18 \times 3$ $e = 54$	$e = 54$
5.	$6x - 9 = 21$ $6x = 21 + 9$ $6x = 30$ $x = \frac{30}{6}$ $x = 5$	$x = 5$
6.	$4 \times \square + 7 = 11$ $4 \times \square = 11 - 7$ $4 \times \square = = 4$ $\square = \frac{4}{4} = 1$	3rd answer

7.	$5 \times (\square + 1) = 25$ $\square + 1 = \frac{25}{5} = 5$ $\square = 5 - 1 = 4$	2nd answer
8.	$7x = 3x + 12$ so $7x - 3x = 12$ not $7x + 3x = 12$ as given. Error in line 1	1st answer
9.	$3x = 20 - x$ $3x + x = 20$ $4x = 20$ $x = \frac{20}{4}$ $= 5$	4th answer
10.	$12 - \frac{21}{7} = 12 - 3 = 9 \neq 7$ $12 - \frac{28}{7} = 12 - 4 = 8 \neq 7$ $12 - \frac{35}{7} = 12 - 5 = 7$ $12 - \frac{42}{7} = 12 - 6 = 6 \neq 7$ $k = 35$ is correct answer	3rd answer

High School
Mathematics Test 2015

Year 8

Equations

Calculator Allowed
Short Answer
Section

ANSWERS

No.	WORKING	ANSWER
1.	$m - 2.8 = 1.6$ $m = 1.6 + 2.8$	2nd answer
2.	$d + 2.6 = 4.2$ $d = 4.2 - 2.6$ $d = 1.6$	$d = 1.6$
3.	$y - 458 = 583$ $y = 458 + 583$ $= 1041$	4th answer
4.	$36w = 648$ $w = \frac{648}{36}$ $w = 18$	$w = 18$
5.	$12m - 15 = -3$ $12m = -3 + 15$ $12m = 12$ $m = \frac{12}{12}$ $m = 1$	$m = 1$
6.	$\frac{8g}{3} = -16$ $8g = -16 \times 3$ $8g = -48$ $g = -\frac{48}{8}$ $= -6$	1st answer

7.	$\frac{s}{5} - 7 = -3$ $\frac{s}{5} = -3 + 7$ $\frac{s}{5} = 4$ $s = 4 \times 5$ $s = 20$	4th answer
8.	Line 3 should be $m = 36 - 4$	3rd answer
9.	$8z = 3z - 55$ $8z - 3z = -55$ $5z = -55$ $z = -\frac{55}{5}$ $z = -11$	1st answer
10.	$6(m - 3) = -6$ $m - 3 = -\frac{6}{6}$ $m - 3 = -1$ $m = -1 + 3$ $m = 2$	$m = 2$

High School
Mathematics Test 2015

Year 8

Equations

Calculator Allowed
Longer Answer Section

ANSWERS

1.

Marks

a)

$$\begin{aligned} 9m + 3 &= 30 \\ 9m &= 30 - 3 \\ 9m &= 27 \\ m &= \frac{27}{9} \\ m &= 3 \end{aligned}$$

2 marks for correct answer with reasoning.

1 mark for an attempt with some correct reasoning

b)

$$\begin{aligned} 4(a + 7) &= 24 \\ 4a + 28 &= 24 \\ 4a &= -4 \\ a &= -1 \end{aligned}$$

OR

$$\begin{aligned} 4(a + 7) &= 24 \\ a + 7 &= 6 \\ a &= 6 - 7 \\ a &= -1 \end{aligned}$$

Marks

2 marks for correct answer with reasoning.

1 mark for an attempt with some correct reasoning

c)`

$$\begin{aligned} 5s &= 21 - 2s \\ 5s + 2s &= 21 \\ 7s &= 21 \\ s &= \frac{21}{7} \\ s &= 3 \end{aligned}$$

2 marks for correct answer with reasoning.

1 mark for an attempt with some correct reasoning

d)

$$\begin{aligned} \frac{e}{5} - 6 &= 1 \\ \frac{e}{5} &= 1 + 6 \\ \frac{e}{5} &= 7 \\ e &= 5 \times 7 \\ e &= 35 \end{aligned}$$

2 marks for correct answer with reasoning.

1 mark for an attempt with some correct reasoning

2.

Marks

a)

$$\begin{aligned} 8y - 7 &= 17 + \\ 8y - 5y - 7 &= 17 \\ 3y - 7 &= 17 \\ 3y &= 17 + 7 \\ 3y &= 24 \\ y &= \frac{24}{3} \\ y &= 8 \end{aligned}$$

3 marks for correct answer with reasoning.

2 marks for basically correct working with a single error

1 mark for an attempt with some correct reasoning

b)

$$\begin{aligned} \frac{5p - 3}{4} &= -7 \\ 5p - 3 &= -7 \times 4 \\ 5p - 3 &= -28 \\ 5p &= -28 + 3 \\ 5p &= -25 \\ p &= -\frac{25}{5} \\ p &= -5 \end{aligned}$$

Marks

3 marks for correct answer with reasoning.

2 marks for basically correct working with a single error

1 mark for an attempt with some correct reasoning

c)

$$\begin{aligned} 5(7 - 2a) &= 20 \\ 35 - 10a &= 20 \\ -10a &= 20 - 35 \\ -10a &= -15 \\ a &= \frac{-15}{-10} \\ a &= 1\frac{1}{2} \end{aligned}$$

3 marks for correct answer with reasoning.

2 marks for basically correct working with a single error

1 mark for an attempt with some correct reasoning

d)

$$\begin{aligned} \frac{5w}{4} + 7 &= 17 \\ \frac{5w}{4} &= 17 - 7 \\ \frac{5w}{4} &= 10 \\ 5w &= 10 \times 4 \\ 5w &= 40 \\ w &= \frac{40}{5} \\ w &= 8 \end{aligned}$$

3 marks for correct answer with reasoning.

2 marks for basically correct working with a single error

1 mark for an attempt with some correct reasoning