High School Mathematics Test 2014

Year 8

Equations

Non Calculator Section

Skills and Knowledge Assessed:

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

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 the test paper. Calculators are ***not*** *allowed.*

1. What number is missing from the sentence?

$12 + \boxed{?} = 20$

☐ 5 ☐ 8 ☐ 32 ☐ 240

2. Give the solution to:

$a - 12 = 27$ $\quad a =$ ☐

3. Which is the correct solution to:

$9k = 45$

☐ $k = 5$ ☐ $k = 7$ ☐ $k = 12$ ☐ $k = 15$

4. Give the solution to:

$\frac{w}{6} = -12$ $\quad w =$ ☐

5. Solve:

$5x = 4x + 9$ $\quad x =$ ☐

6. What number is missing from the sentence?

$3 \times \boxed{?} - 8 = 8$

☐ $-5\frac{1}{3}$ ☐ 0 ☐ $5\frac{1}{3}$ ☐ $21\frac{1}{3}$

7. What number is missing from the sentence?

$$3\left(\boxed{?} - 4\right) = 9$$

☐ 7 ☐ 8 ☐ 10 ☐ 13

8. Which line in the solution to the equation $6x - 5 = 13$ contains an error?

$6x - 5 = 13$

Line 1 $6x = 13 - 5$

Line 2 $6x = 8$

Line 3 $x = \frac{8}{6}$

Line 4 $x = 1\frac{1}{3}$

☐ Line 1 ☐ Line 2 ☐ Line 3 ☐ Line 4

9. *Solve* $3x = 15 - 2x$

☐ $x = 1$ ☐ $x = 2$ ☐ $x = 3$ ☐ $x = 4$

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

$$\frac{a}{4} - 5 = 1$$

☐ $a = 20$ ☐ $a = 24$ ☐ $a = 28$ ☐ $a = 32$

Year 8

Equations

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 the test paper. Calculators are allowed.

1. *Which calculation could be used to find the solution to the equation* $\frac{t}{4} = 1.6$ *?*

☐ $t = 1.6 + 4$ ☐ $t = 1.6 - 4$ ☐ $t = 1.6 \div 4$ ☐ $t = 1.6 \times 4$

2. *Give the solution to:*
$p - 2.6 = 3.5$ $p =$ ☐

3. *Which is the correct solution to:*

$y + 0.6 = 1.9$

☐ $y = 0.9$ ☐ $y = 1.1$ ☐ $y = 1.3$ ☐ $y = 2.5$

4. *Solve:* $0.8v = 4$ $v =$ ☐

5. *Solve:* $\frac{2m}{5} = -4$ $m =$ ☐

6. Solve the equation $4d - 5 = 9$.

☐ $d = 1$ ☐ $d = 2\frac{1}{2}$ ☐ $d = 3\frac{1}{2}$ ☐ $d = 14$

7. Which is the correct solution to the equation :

$$\frac{a - 2.5}{2} = 4.5$$

☐ $a = 2.5$ ☐ $a = 9$ ☐ $a = 10.5$ ☐ $a = 11.5$

8. Which line in the solution to the equation $\frac{a}{8} - 6 = 12$ contains an error?

$$\frac{a}{8} - 6 = 12$$

Line 1 $\frac{a}{8} = 12 + 6$

Line 2 $\frac{a}{8} = 20$

Line 3 $a = \frac{20}{8}$

Line 4 $a = 2\frac{1}{2}$

☐ Line 1 ☐ Line 2 ☐ Line 3 ☐ Line 4

9. Which is the solution to $20 - 6z = -4$?

☐ $z = -4$ ☐ $z = 2$ ☐ $z = 4$ ☐ $z = 24$

10. Solve $6m = 2m - 6$

$m =$ ☐

High School Mathematics Test 2014

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)	$6x - 5 = 17$	**2**	b)	$2(x + 9) = 12$	**2**
c)	$4d = 12 - 2d$	**2**	d)	$\frac{q}{9} - 5 = 2$	**2**

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

Marks

a) $4x - 9 = 12 - 3x$ 3

b) $\frac{2x + 5}{8} = 36$ 3

c) $3(2x + 4) = 12$ **3**

d) $\frac{2v}{5} - 9 = 1$ **3**

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Mathematics Test 2014

Equations
ANSWERS

Non Calculator Section (1 mark each)

Q no		Answer
1.	Missing number = 20 – 12 = 8	2nd Answer
2.	$a = 27 + 12 = 39$	$a = 39$
3.	$9k = 45$ $k = \frac{45}{9} = 5$	1st Answer
4.	$\frac{w}{6} = -12$ $w = -12 \times 6 = -72$	$w = -72$
5.	$5x = 4x + 9$ $5x - 4x = 9$ $x = 9$	$x = 9$
6.	$3 \times \square - 8 = 8$ $3 \times \square = 16$ $\square = \frac{16}{3} = 5\frac{1}{3}$	3rd Answer
7.	$3\left(\square - 4\right) = 9$ $\square - 4 = 3$ $\square = 3 + 4 = 7$	1st Answer
8.	First line should be $6x = 13 + 5$	1st Answer
9.	$3x = 15 - 2x$ $3x + 2x = 15$ $5x = 15$ $x = 3$	3rd Answer
10.	$a = 24$ $LHS = \frac{24}{4} - 5 = 6 - 5 = 1$ $RHS = 1$	2nd Answer

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Calculator Allowed Short Answer Section (1 mark each)

Q no		Answer
1.	$t = 1.6 \times 4$	4th Answer
2.	$p - 2.6 = 3.5$ $p = 3.5 + 2.6$ $p = 6.1$	6.1
3.	$y = 1.9 - 0.6 = 1.3$	3rd Answer
4.	$0.8v = 4$ $v = \frac{4}{0.8} = 5$	$v = 5$
5.	$\frac{2m}{5} = -4$ $2m = -4 \times 5$ $2m = -20$ $m = -10$	$m = -10$
6.	$4d - 5 = 9$ $4d = 14$ $d = \frac{14}{4} = 3\frac{1}{2}$	3rd Answer
7.	$\frac{a - 2.5}{2} = 4.5$ $a - 2.5 = 9$ $a = 11.5$	4th Answer
8.	Line 2 should be $\frac{a}{8} = 18$	2nd Answer
9.	$20 - 6z = -4$ $-6z = -4 - 20 = -24$ $z = -\frac{24}{-6}$ $z = 4$	3rd Answer
10.	$6m = 2m - 6$ $4m = -6$ $m = -\frac{6}{4} = -1\frac{1}{2}$	$m = -1\frac{1}{2}$

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Mathematics Test 2014

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

Marks **Marks**

a) $6x - 5 = 17$ **2**

$6x = 17 + 5$

$6x = 22$

$x = \frac{22}{6}$

$x = 3\frac{2}{3}$

b) $2(x + 9) = 12$ **2**

$2x + 18 = 12$

$2x = 12 - 18$

$2x = -6$

$x = -\frac{6}{2}$

$x = -3$

c) $4d = 12 - 2d$ **2**

$4d + 2d = 12$

$6d = 12$

$d = \frac{12}{6}$

$d = 2$

d) $\frac{q}{9} - 5 = 2$ **2**

$\frac{q}{9} = 2 + 5$

$\frac{q}{9} = 7$

$q = 7 \times 9$

$q = 63$

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

Marks **Marks**

a) $4x - 9 = 12 - 3x$ 3

$4x = 12 + 9 - 3x$

$4x = 21 - 3x$

$4x + 3x = 21$

$7x = 21$

$x = \frac{21}{7} = 3$

b) $\frac{2x + 5}{8} = 36$ 3

$2x + 5 = 8 \times 36$

$2x + 5 = 288$

$2x = 288 - 5$

$2x = 283$

$x = \frac{283}{2}$

$x = 141\frac{1}{2}$

c)	$3(2x + 4) = 12$ $6x + 12 = 12$ $6x = 12 - 12$ $6x = 0$ $x = 0$	**3**	d)	$\frac{2v}{5} - 9 = 1$ $\frac{2v}{5} = 1 + 9$ $\frac{2v}{5} = 10$ $2v = 5 \times 10$ $2v = 50$ $v = \frac{50}{2}$ $v = 25$	**3**