High School Mathematics Test 2013

Year 7 Introductory Algebra

Non Calculator Section

,	 kills and Knowledge Assessed: Introduce the concept of variables as a way of representing numbers using letters (ACMNA175) Extend and apply the laws and properties of arithmetic to algebraic terms and expressions (ACMNA177) Simplify algebraic expressions involving the four operations (ACMNA192) 		
	Answer all questions in the spaces provide Writing the answer in the box provided. or Shading in the bubble for the correct and Show any working out on the test paper.		
1.	2ab = ?		
	$\square \ 2 \times a \times b \qquad \square \ 2 + a + b$		
2.	$p^{3} = ?$		
	$p+3$ $p \times 3$		
3.	Karens teacher says "The square of a is subtraction Which of these algebraic expressions could re-	<u>v</u>	
	$\square 2a-b$	\Box $b-2a$	
	$\Box a^2 - b$	$\Box b-a^2$	
4.	Which of these is always true:		
		$\Box a \times b = b \times a$	
	a-b = b-a	$ a \div b = b \div a $	
5.	Simplify the expression $2m + 5m + 7m$.		

- 6. Which of these is the same as 2s + 9d?
 - \Box 5s + 3s + 4d + 5d

 \Box s+s+9d-d

 \Box 5s - 3s + 4d + 5d

 \square s-s+10d-d

7. Simplify: 2xy - xy + 8xy.



- 8. Which of the following is **not** equivalent to 12ab?
 - \Box 5ab + 7ab

 \square 20ab – 8ab

 $\bigcap 12 \times a \times b$

 \Box 12a + b

9. Simplify $2a \times 5ah$.

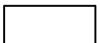


10. Express 2x + 5y - 7x + 3y in simplest form.



- 11. Which of these is equivalent to $\frac{12x^2y}{5}$?

12. Simplify $20mn \div 4m$



When c = 12 and d = 3, calculate the value of $3c + d^2$.



Mrs Brown asks her class to evaluate $\frac{2xy}{5}$, when x = 10 and y = 7.

Four of the student's answers are given below.

- Which is correct?
 - □ 15
- □ 28
- □ 54
- □ 294

15.

If x = 3, y = -4 and z = -5, what is the value of $\frac{x^2 + y^2}{7}$?



Petrol costs C cents per litre. Which expression would give the cost in dollars of N litres of 16. petrol?

- $\Box C + \frac{N}{100}$ $\Box \frac{C+N}{100}$ $\Box \frac{100N}{C}$

CN
100

Brad buys Q packets of biscuits which cost \$B each and 4 packets of sweets which cost \$J 17.

Write an expression for the cost of the biscuits and sweets.



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Introductory Algebra

Calculator Allowed Short Answer Section

Name

	your answers on the accompanying multiple chany working out on this test paper. Calculators a	
1.	$\frac{a}{b}$ means the same as:	
	$\Box a \times b$ $\Box a - b$	$\Box a \div b \qquad \Box b^a$
2.	Write $k + k + k + k + k + k$ in simplest fo	rm.
3.	Write "the sum of twice x and three times y" is	n simplest form, using algebra.
4.	Which of these is the same as $\frac{m}{pq}$?	
	$\square m \div (p \times q)$	$\square (m \div p) \times q$
	$\bigcap m \div p \times q$	$\square \frac{m}{p} \times q$
5.	Simplify $3ab + 9a + ab - 4a$.	
6.	Which of these is not the same as $2s + 8w$?	
	$\bigcap s + s - 2w + 10w$	$\int 5s - 3s + 4w + 4w$

Simplify $17pr - 6y^2 + 8y^2 - 11pr$. 7.

Which of the following is **not** equivalent to $9ab + 11a^2$? 8.

$$\Box 10ab + 12a^2 - a^2 + ab$$

$$\Box 6ab + 15a^2 + 3ab - 4a^2$$

$$\Box 14ab + 18a^2 - 5ab - 7a^2$$

9. Which of these simplifies to mn - 20?

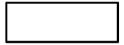
$$\Box m + n - 10 - 10$$

$$\square$$
 10mn + 30 - 9mn - 50

$$\bigcap m \times n + 10 - 10$$

$$\square$$
 10*mn* – 30 + 9*mn* + 50

Simplify $a^{2}b - 3ab^{2} + 7ab^{2} - 6a^{2}b$ 10.



11. Simplify $\frac{40a^2b^2}{8ab^2}$



12. $\frac{18p^2m}{30pmn} = ?$

$$\Box \frac{3p}{5n}$$

$$\Box \frac{3}{5pn}$$

$$\square \frac{3pn}{5}$$

$$\Box \frac{3p}{5m^2n}$$

When g = 360, k = 45 and m = 9, what is the value of $\frac{g}{k} + \frac{k}{m}$? 13.



14. What is the value of $3p^2 - 12pq$ when p = 5 and q = -3.

- ☐ 45
- 105
- \square 255
- **405**

Which expression does not have a value of 0 when f = -2? 15.

- \Box $f^2 + 2f$ \Box $4f + 2f^2$ \Box $f^2 2f$
- $\square 3f^2 + 6f$

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Year 7

ANSWERS

Non Calculator Section

1.	$2 \times a \times b$
2.	$p \times p \times p$
3.	$b-a^2$
4.	$a \times b = b \times a$
5.	14 <i>m</i>
6.	5s - 3s + 4d + 5d
7.	9xy
8.	12a + b
9.	$10a^2h$
10.	8y - 5x

	2.2
11.	$\frac{24x^2y^2}{10y}$
	10y
12.	5 <i>n</i>
13.	45
14.	28
15.	-5
16.	CN
	100
17.	BQ + 4J

Calculator Allowed Section

1.	$a \div b$
2.	6 <i>k</i>
3.	2x + 3y
4.	$m \div (p \times q)$
5.	4ab + 5a
6.	2s + 7w + w + s
7.	$6pr + 2y^2$
8.	$10ab + 12a^2 - a^2 + ab$

9.	10mn + 30 - 9mn - 50
10.	$4ab^2 - 5a^2b$
11.	5 <i>a</i>
12.	$\frac{3p}{5n}$
	5 <i>n</i>
13.	13
14.	255
15.	$\int_{0}^{2} -2f$