Algebra

Student Book - Series H-1

$7(4x - y) =$ _____

Mathletics Instant Workbooks

Algebra
Student Book - Series H

Contents

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Algebra

Topic 1: Algebraic expressions

QUESTION 1   Write an expression for the following.

a   The sum of x and y = _____

b   Five less than x = _____

c   The double of a = _____

d   The difference between a and b = _____

e   Half of x = _____

f   Seven times the number m = _____

g   The sum of x and 21 = _____

h   The sum of l, $3m$ and $2n$ = _____

QUESTION 2   If x represents any number, write an algebraic expression for the following.

a   Three times the number = _____

b   One third of the number = _____

c   The sum of the number and 12 = _____

d   Difference between the number and 7 = _____

e   Two more than the number = _____

f   Seven less than the number = _____

QUESTION 3   Write algebraic expressions to show the sum of the following.

a   8 and a = _____   **b** x and y = _____   **c** x, y and z = _____

d $2a$, $3b$ and $8c$ = _____   **e** $2l$, $8m$ and $3n$ = _____   **f** $5x$, $2y$ and $3z$ = _____

QUESTION 4   Write algebraic expressions for the following.

a   To the sum of $6x$ and $3y$, add $2n$.   _____

b   From the product of m and n, take away 3.   _____

c   Divide x by y and then take 9 away.   _____

d   Divide the sum of p and q by 9.   _____

e   9 plus y all divided by 3.   _____

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Topic 2: Simplifying algebraic expressions

QUESTION 1 For each of the following terms, write down the coefficient of the pronumeral.

a $8x$ _____

b $7y$ _____

c $11t$ _____

d $32a$ _____

e $51b$ _____

f $30y$ _____

g $23c$ _____

h $10l$ _____

i $15m$ _____

j $46n$ _____

k $13d$ _____

l $37p$ _____

QUESTION 2 List the like terms in the following.

a $2b, 7a, 5a$ _____

b $3x, 4y, 2x$ _____

c $8x, 2a, 3x$ _____

d $5a, 2d, 3a$ _____

e $6y, 5a, 2y$ _____

f $2l, 3m, 5l$ _____

g $2d, 3c, 5c$ _____

h $8, 5a, 3a$ _____

i $9x, x, y$ _____

QUESTION 3 Simplify the following.

a $y + y =$ _____

b $x + x + x + x =$ _____

c $m + m + m + m + m =$ _____

d $a + a + a =$ _____

e $l + l + l + l + l + l =$ _____

f $n + n + n + n =$ _____

g $2d + 3d =$ _____

h $5k + 2k + k =$ _____

i $3a + 7a =$ _____

QUESTION 4 Simplify the following expressions.

a $18x - 3x =$ _____

b $15b - 12b =$ _____

c $24a - 12a =$ _____

d $17a - 7a =$ _____

e $15x - 6x =$ _____

f $12a - 3a =$ _____

g $9m - m =$ _____

h $14p - 2p =$ _____

i $10x - x =$ _____

QUESTION 5 Simplify the following.

a $5 \quad d =$ _____

b $6 \quad a \quad c =$ _____

c $a \quad b \quad c =$ _____

d $8 \quad x \quad y =$ _____

e $15 \quad m \quad l \quad n =$ _____

f $4 \quad a \quad c =$ _____

g $x \quad y \quad 7 =$ _____

h $8 \quad 2 \quad a \quad b =$ _____

i $5 \quad c \quad d \quad e =$ _____

QUESTION 6 Write the following expressions in expanded form.

a $3ab =$ _____

b $5xyz =$ _____

c $7mnt =$ _____

d $6m =$ _____

e $8abc =$ _____

f $9alm =$ _____

g $15xy =$ _____

h $11de^2f =$ _____

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Topic 3: Collecting like terms

QUESTION **1**   Collect like terms to simplify the following.

a $a + a + a + a + b + b =$ _____

b $x + x + x + x + y + y + y + y =$ _____

c $c + c + c + c + c + d =$ _____

d $m + n + n + n =$ _____

e $p + p + p + q + q + q =$ _____

f $l + l + l + l + l + l + m + m =$ _____

g $u + u + u + u + u + u + v =$ _____

h $e + e + e + f + f =$ _____

QUESTION **2**   Simplify the following by collecting like terms.

a $4x + 9 + 2x + 7 =$ _____

b $8a + 9 + 7a + 3 =$ _____

c $5a + 3b + 4a =$ _____

d $5x + 2y + 2x =$ _____

e $7m + 8n + 9m =$ _____

f $2x + 3y + 5x + 8y =$ _____

g $5d + 3a + 9d + 5a =$ _____

h $8x + 15 + 6a + 6 =$ _____

QUESTION **3**   Simplify the following.

a $15a - 6a + 9a + b =$ _____

b $8x + 7y - 6x - 3y =$ _____

c $5m + 7n + 8m - 3n =$ _____

d $5p - 3p + 12q - 7q =$ _____

e $9x + 7y - 3x + 2y =$ _____

f $9p - 7p + 8q - 6q =$ _____

g $18x + 35x + 9 =$ _____

h $15abc - 12abc =$ _____

i $14l - 6l + 5m + 18m - 9m =$ _____

j $5x + 8y + 9x - 3y - 2y =$ _____

QUESTION **4**   Simplify the following.

a $27xy - 21xy =$ _____

b $18xyz - 12xyz =$ _____

c $18abc - 14abc =$ _____

d $21a + 31b + 41a =$ _____

e $8x^2y + 7x^2y - 2x^2y =$ _____

f $8a^3 + 7a^3 - 3a^3 =$ _____

g $5x^2 + 8x^2 - 2x^2 =$ _____

h $24a^2 + 18b^2 - 12a^2 =$ _____

i $7ab + 9ab + 8abc - 3abc =$ _____

j $5a^2b + 8l + 7a^2b - 3l =$ _____

k $6x^2y^2 + 8y + 4x^2y^2 + 3y =$ _____

l $9a^2b^2 + 6a^2b^2 - 7a^2b^2 + 8ab =$ _____

m $16ab^2 + 8a^2b - 12ab^2 =$ _____

n $15xyz + 4y + 3xyz - 3y =$ _____

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Topic 4: Algebraic abbreviations

QUESTION **1**

a   Write $8 \times m$ in a shorter way.   _____

b   Write $2 \times 3 \times n$ in a shorter way.   _____

c   Write $6 \times x \times x$ in another way.   _____

d   Write $6xy$ showing multiplication signs.   _____

e   What is the difference between $24m$ and $2 \times 4 \times m$?   _____

QUESTION **2**   Write the following expressions without multiplication or division signs.

a $6 \times 3 \times k =$ _____

b $4 \times m \times 2 =$ _____

c $x + 3 \times y =$ _____

d $5 \times (a + 2) =$ _____

e $n \div 3 =$ _____

f $x \times y \times z =$ _____

g $2 \times b \times 3 =$ _____

h $p \times q \times 9$ _____

i $3 \times a \times 7 \times b =$ _____

j $2 \times n - 5 =$ _____

k $3 + 8 \times a =$ _____

l $3 \times x + 4 \times y$ _____

m $9 \div a =$ _____

n $2x \div 9 =$ _____

o $k \div 12 =$ _____

p $(p + q) \div 7 =$ _____

q $8a \div (a + 2) =$ _____

r $(4a + 8) \div 3a =$ _____

QUESTION **3**   Write the following expressions by showing all multiplication or division signs.

a $3m =$ _____

b $2x =$ _____

c $7y =$ _____

d $3n - 1 =$ _____

e $4m + 5 =$ _____

f $20 - 3a =$ _____

g $xy - 6 =$ _____

h $k - 4l =$ _____

i $xyz =$ _____

j $19xy =$ _____

k $6a^2 + 1 =$ _____

l $m^2 - n^2 =$ _____

QUESTION **4**   Write the following in a shortened form.

a $3 \times (x + 2) =$ _____

b $5 \times (m - 8) =$ _____

c $8 \times p \times (q + 2) =$ _____

d $2 \times 3 \times (a - 5) =$ _____

e $a \times b \times (c + 4) =$ _____

f $4 \times (5 \times a - 1) =$ _____

g $7 \times (4 + 3 \times x) =$ _____

h $5 \times (3 \times y - 2 \times z)$ _____

i $(n + 2) \times (n + 3) =$ _____

j $(4p + 1) \times (4q - 3) =$ _____

k $a \times 3 \times a \times a =$ _____

l $y \times y \times y \times a \times a =$ _____

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Topic 5: Substitution

QUESTION **1**   If $a = 3$, find the value of the following expressions.

a $5a =$ _____

b $8a + 1 =$ _____

c $4a - 1 =$ _____

d $a^2 =$ _____

e $3a^2 =$ _____

f $(a + 1)(a - 1) =$ _____

g $8a - 10 =$ _____

h $a^2 - a =$ _____

i $a \div 6 =$ _____

j $9a \div 3 =$ _____

k $27 \div a =$ _____

l $(a - 2) \div 9 =$ _____

QUESTION **2**   If $a = 2$, $b = 5$, $c = 7$ and $d = 9$, find the value of

a $a + b =$ _____

b $c + d =$ _____

c $ab + cd =$ _____

d $abc =$ _____

e $2a + 3b =$ _____

f $2b + 5c =$ _____

g $9ab =$ _____

h $7b - c =$ _____

i $8b \div a =$ _____

j $3a - a^2 =$ _____

k $a + b + c =$ _____

l $8c - a =$ _____

QUESTION **3**   Complete the following.

a $b = a + 4$

a	1	2	3	4	5
b					

b $y = 2 + 5x$

x	0	1	5	7
y				

c $m = 12 - l$

l	0	1	5	7	9
m					

d $y = 3x - 1$

x	1	2	3	4	5	6
y						

e $q = 4p + 3$

p	0	1	2	3	4
q					

f $v = 20 - 3u$

u	1	2	3	4	5	6
v						

QUESTION **4**   Complete the following table.

	m	n	$m + n$	$m - n$	mn	m^2	n^2	$3m + 2n$
a	4	2						
b	3	1						
c	7	2						
d	6	1						
e	9	3						
f	8	7						

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Topic 6: Index notation

QUESTION 1   Write each of the following in simplest index notation.

a $m \times m \times m =$ _____

b $a \times a \times a \times a \times a \times a =$ _____

c $l \times l \times l \times l =$ _____

d $x \times x \times x \times x \times x \times x \times x \times x \times x =$ _____

e $p \times p =$ _____

f $q \times q \times q \times q \times q =$ _____

QUESTION 2   Write each of the following in the expanded form.

a $b^2 =$ _____

b $x^5 =$ _____

c $a^4 =$ _____

d $m^7 =$ _____

e $e^3 =$ _____

f $f^8 =$ _____

QUESTION 3   Find the value of each of the following when $x = 2$

a $x^2 =$ _____

b $x^5 =$ _____

c $x^4 =$ _____

d $x^3 =$ _____

e $x^7 =$ _____

f $3x =$ _____

QUESTION 4   Write each of the following in simplest index notation.

a $3 \times a \times a \times a =$ _____

b $4 \times y \times y \times 2 =$ _____

c $x \times x \times 6 \times x \times x =$ _____

d $p \times p \times 2 \times p \times p =$ _____

e $h \times h \times 9 \times h =$ _____

f $3 \times m \times m \times 3 \times m \times m =$ _____

QUESTION 5   Expand each of the following.

a $5x^2 =$ _____

b $8a^3 =$ _____

c $7y^4 =$ _____

d $6m^5 =$ _____

e $11x^3 =$ _____

f $9y^2 =$ _____

QUESTION 6   Find the value of each of the following when $a = 2$ and $b = 3$

a $a^2 =$ _____

b $a^3 b =$ _____

c $a^2 + ab =$ _____

d $a^3 + b^2 =$ _____

e $4a^2 + 3b^2 =$ _____

f $9b^3 =$ _____

g $b^2 - a^2 =$ _____

h $8a^2 b =$ _____

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Topic 7: Index laws

QUESTION **1**   Simplify the following, writing your answer in index form.

a $x^6 \; x^2 = $ _____

b $y^3 \; y^2 = $ _____

c $a^3 \; a^4 = $ _____

d $m^3 \; m^5 = $ _____

e $p^2 \; p^7 = $ _____

f $n^9 \; n^2 = $ _____

g $a^2 \; a^3 \; a^5 = $ _____

h $x^4 \; x^2 \; x = $ _____

i $y^3 \; y^9 = $ _____

QUESTION **2**   Simplify the following.

a $x^7 \; x^2 = $ _____

b $x^9 \; x^3 = $ _____

c $x^5 \; x = $ _____

d $y^6 \; y^4 = $ _____

e $y^9 \; y^7 = $ _____

f $a^8 \; a^3 = $ _____

g $m^{20} \; m^{11} = $ _____

h $m^9 \; m^8 = $ _____

i $m^{14} \; m^{10} = $ _____

QUESTION **3**   Simplify the following.

a $\left(a^2\right)^3 = $ _____

b $\left(b^3\right)^4 = $ _____

c $\left(a^4\right)^5 = $ _____

d $\left(x^3\right)^6 = $ _____

e $\left(x^2\right)^7 = $ _____

f $\left(x^5\right)^2 = $ _____

g $\left(5x^2\right)^2 = $ _____

h $\left(2x^3\right)^3 = $ _____

i $\left(3b^5\right)^2 = $ _____

QUESTION **4**   Simplify the following.

a $3x^5 \; x^4 = $ _____

b $4x^9 \; x^2 = $ _____

c $a^9 \; 3a^4 = $ _____

d $m^5 \; 6m^2 = $ _____

e $8k^2 \; 6k^3 = $ _____

f $3m^5 \; 7m^6 = $ _____

g $m^3n^2 \; m^4n^5 = $ _____

h $x^2y^3 \; x^4y^7 = $ _____

i $xy \; x^3y^2 = $ _____

j $24x^7y^6 \; 8x^5 = $ _____

k $12m^4n^3 \; 6m^2n^2 = $ _____

l $32x^7y^5 \; 16x^2y^2 = $ _____

QUESTION **5**   Simplify the following.

a $\left(a^2b^3\right)^2 = $ _____

b $\left(x^5y\right)^3 = $ _____

c $\left(m^7n^2\right)^3 = $ _____

d $x^5 \; x^6 \; x^3 = $ _____

e $x^6 \; x^3 \; x^2 = $ _____

f $a^4 \; a^5 \; a^7 = $ _____

g $\dfrac{a^7 \; a^7}{a^4} = $ _____

h $\dfrac{a^{10} \; a^5}{a^8} = $ _____

i $\dfrac{b^9 \; b^9}{b^8} = $ _____

QUESTION **6**   Simplify the following.

a $x^9 \; x^7 = $ _____

b $x^7 \; x^3 = $ _____

c $x^{17} \; x^{13} = $ _____

d $x^4 \; x^2 \; x^3 = $ _____

e $x^5 \; x^4 \; x^7 = $ _____

f $x^8 \; x^3 \; x^9 = $ _____

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Topic 8: Grouping symbols

QUESTION **1**   Expand the following expressions.

a $3(a + 2b) =$ _____

b $5(3a + b) =$ _____

c $2(4a + b) =$ _____

d $7(3m + 2n) =$ _____

e $8(6m - n) =$ _____

f $4(3x + 8y) =$ _____

g $5(x + 2y) =$ _____

h $6(9a - 2b) =$ _____

i $5(3a - b) =$ _____

QUESTION **2**   Expand.

a $4(2a + 9) =$ _____

b $7(4x - y) =$ _____

c $9(2x - 8y) =$ _____

d $y(y + 3) =$ _____

e $x(x + 4) =$ _____

f $a(a + b) =$ _____

g $k(k - 3) =$ _____

h $4l(l - 5) =$ _____

i $2p(p - 6) =$ _____

QUESTION **3**   Remove the grouping symbols.

a $a(2a + 3) =$ _____

b $2m(3m - 7) =$ _____

c $p(2p + 8) =$ _____

d $x(2x + 7) =$ _____

e $8y(2y + 7) =$ _____

f $7p(3p - 1) =$ _____

g $m(3m - 9) =$ _____

h $6x(2x + 5) =$ _____

i $5a(2a - 11) =$ _____

QUESTION **4**   Expand.

a $6(3y + 5) =$ _____

b $7(8a - 3b) =$ _____

c $9(x - y) =$ _____

d $5(8y - 7) =$ _____

e $4(5a - 2b) =$ _____

f $2(2a + b) =$ _____

g $2(3x - 2y) =$ _____

h $p(3p - 6) =$ _____

i $7(a + 3b) =$ _____

QUESTION **5**   Expand the following expresions.

a $ay(y^2 - 4) =$ _____

b $x(x^3 - 7) =$ _____

c $a(a^3 - 6) =$ _____

d $9(8x + 3y) =$ _____

e $2m(4m - 7n) =$ _____

f $8(5p - 6) =$ _____

g $5(6x - 7y) =$ _____

h $5p(2p + 3) =$ _____

i $8(6a - 7b) =$ _____

QUESTION **6**   Expand.

a $x(9x - 7y) =$ _____

b $m(3m - 7n) =$ _____

c $6p(4p - 7q) =$ _____

d $x^2(x^3 - 5) =$ _____

e $6p^2(p^2 + 7) =$ _____

f $5a^4(a^2 + 3) =$ _____

g $a^3(a^4 - a) =$ _____

h $9mn(2m + 2) =$ _____

i $6a^3y^2(a^3 + y) =$ _____

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Topic 9: Equations — choosing the correct solution

QUESTION 1 By substituting back into equation, see if the given value of the pronumeral is correct or incorrect.

a $x + 5 = 15$ $[x = 10]$ —————

b $y + 3 = 16$ $[y = 12]$ —————

c $x - 6 = 13$ $[x = 19]$ —————

d $a - 8 = 10$ $[a = 2]$ —————

e $x + 9 = 23$ $[x = 8]$ —————

f $b - 5 = 17$ $[b = 22]$ —————

g $x + 8 = 17$ $[x = 7]$ —————

h $n - 2 = 6$ $[n = 8]$ —————

i $x - 3 = 16$ $[x = 19]$ —————

j $m + 5 = 21$ $[m = 16]$ —————

k $x - 7 = 19$ $[x = 26]$ —————

l $n - 3 = 9$ $[n = 12]$ —————

QUESTION 2 Fill in only ONE CIRCLE for the correct solution in each question.

a $x + 5 = 17$

(**A**) 22   (**B**) 12   (**C**) 5   (**D**) 23

b $y - 6 = 23$

(**A**) 17   (**B**) 18   (**C**) 28   (**D**) 29

c $m - 8 = 16$

(**A**) 24   (**B**) 16   (**C**) 8   (**D**) 32

d $a + 3 = 18$

(**A**) 25   (**B**) 21   (**C**) 15   (**D**) 6

e $n - 16 = 32$

(**A**) 16   (**B**) 32   (**C**) 48   (**D**) 2

QUESTION 3 Is the value shown in brackets the solution of the equation? Answer YES or NO.

a $9 + x = 28$ $[x = 16]$ —————

b $d - 7 = 16\frac{1}{2}$ $[d = 23\frac{1}{2}]$ —————

c $6 + y = 24$ $[y = 18]$ —————

d $3y = 36$ $[y = 12]$ —————

e $9 - m = 14$ $[m = \text{-}5]$ —————

f $5x = 15$ $[x = 3]$ —————

g $n - 10 = 12$ $[n = 2]$ —————

h $\frac{x}{3} = 8$ $[x = 24]$ —————

QUESTION 4 Fill in only ONE CIRCLE for the correct solution in each question.

a $3x = 15$

(**A**) 3   (**B**) 15   (**C**) 5   (**D**) 45

b $\frac{x}{2} = 18$

(**A**) 36   (**B**) 9   (**C**) 20   (**D**) 16

c $7y = 21$

(**A**) 28   (**B**) 3   (**C**) 14   (**D**) 147

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Topic 10: One-step equations — addition and subtraction

QUESTION **1**   Solve the following one-step equations.

a $x + 9 = 14$

b $a + 6 = 35$

c $m - 6 = 5$

d $m + 8 = 34$

e $x + 4 = 14$

f $n - 7 = 12$

g $p - 3 = 16$

h $m + 5 = 19$

i $y + 8 = 22$

j $y - 5 = 12$

k $t - 6 = 2$

l $a - 7 = 16$

m $x - 7 = 28$

n $y - 7 = 4$

o $8 + x = 24$

QUESTION **2**   Solve the following equations.

a $a + 16 = 34$

b $y + 7 = 13$

c $6 + y = 18$

d $15 + n = 16$

e $x - 20 = 32$

f $x - 2 = 14$

g $x + 12 = 38$

h $y - 5 = 29$

i $a + 7 = 15$

j $m - 6 = 15$

k $m - 10 = 39$

l $x - 71 = 89$

m $y - 6 = 9$

n $t - 7 = 16$

o $12 + a = 16$

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Topic 11: One-step equations — multiplication and division

QUESTION **1**   Solve the following one-step equations.

a $4x = 32$

b $\dfrac{a}{7} = 8$

c $6y = 24$

d $\dfrac{y}{5} = 8$

e $\dfrac{m}{6} = 11$

f $\dfrac{x}{3} = 15$

g $9y = 81$

h $\dfrac{b}{6} = 12$

i $\dfrac{m}{8} = 12$

j $\dfrac{x}{9} = 6$

k $3p = 15$

l $8x = 72$

m $8x = 48$

n $\dfrac{n}{5} = 9$

o $12x = 96$

QUESTION **2**   Solve the following equations.

a $\dfrac{x}{3} = 8$

b $2a = 14$

c $\dfrac{x}{9} = 7$

d $\dfrac{a}{5} = 25$

e $3x = 27$

f $\dfrac{m}{8} = 10$

g $\dfrac{m}{3} = 16$

h $\dfrac{x}{5} = 10$

i $4x = 52$

j $4a = 36$

k $\dfrac{y}{2} = 16$

l $6x = 84$

m $5x = 75$

n $7n = 28$

o $9x = 63$

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Topic 12: Collecting like terms in equations

QUESTION **1**   Solve the following equations.

a $2x + 3x = 15$

b $8m - 3m = 25$

c $8y - y = 21$

d $9a - 3a = 42$

e $7p - 3p = 20$

f $6x - 4x = 18$

g $6y - 4y = 10$

h $10n - 3n = 28$

i $9m - 5m = 24$

j $8x + x = 63$

k $6y + 2y = 24$

l $6a - a = 25$

m $9y - 2y = 77$

n $7x + 2x = 63$

o $9a - 7a = 14$

QUESTION **2**   Solve the following equations.

a $8x + 5x = 39$

b $8p - 3p = 55$

c $6x + 3x = 81$

d $6m + 2m = 24$

e $9d - d = 40$

f $5a - a = 16$

g $y + y = 12$

h $7a - a = 54$

i $5m + 15m = 40$

j $3x + 2x = 25$

k $8x - 6x = 12$

l $8y - y = 63$

m $9a - 7a = 28$

n $9a - 8a = 10$

o $9x - 2x = 70$

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Topic 13: Problem solving with equations

In the following questions, write an equation using the pronumeral x for the unknown number, and then find the value of x.

1 The sum of a number and 7 is 21.

_____

2 The sum of 5 and x is 14.

_____

3 I think of a number and add 8. The result is 20.

_____

4 A number increased by 6 is 15.

_____

5 The difference between a number and 3 is 8.

_____

6 I think of a number, double it and the result is 24.

_____

7 The product of 3 and x is 21.

_____

8 The product of 8 and x is 32.

_____

9 x divided by 3 equals 5.

_____

In the following questions write an equation and solve.

10 6 less than x equals 9.

_____

11 The sum of 6 and x is 32.

_____

12 The product of 9 and x is 54.

_____

13 x divided by 10 equals 7.

_____

14 The sum of $2x$ and $3x$ is 15.

_____

15 The difference between $8x$ and $6x$ is 16.

_____

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Topic 14: Problem solving with algebra

1   Find an expression for the perimeter of a square with side length of x units.

_____

2   If a bag contains m number of marbles, how many marbles are in five similar bags?

_____

3   A fence is x metres long. A further y metres is added. How long is the fence now?

_____

4   The sum of a number and 9 is 15. What is the number?

_____

5   Michael has $\$x$ and gets $\$8y$ from the bank. How much does he have now?

_____

6   The product of a number and 7 is 56. What is the number?

_____

7   If a number is multiplied by 6, and 3 is added to the product, the result is 45. What is the number?

_____

8   Is 8 is subtracted from a number, the result is 12. What is the number?

_____

9   The sum of a number and 7 is 21. What is the number?

_____

10   If a number is divided by 9, the result is 8. What is the number?

_____

11   If 7 is subtracted from the product of 3 and a number, the result is 23. What is the number?

_____

12   A photograph is x cm long and y cm wide. Find its area.

_____

13   A room is measured $2a$ metres long and $3b$ metres wide. Find the difference between its length and width in metres.

_____

14   I walked $3x$ km in the morning and $4y$ km in the evening. How many kilometres did I walk altogether?

_____

15   Find the perimeter of a rectangular block of land $3p$ metres long and $4q$ metres wide.

_____

Algebra
Unit Test

PART A

Instructions This part consists of 12 multiple-choice questions

Each question is worth 1 mark

Fill in only ONE CIRCLE for each question

Calculators are NOT allowed

Time allowed: 15 minutes   **Total marks = 12**

Marks

1 $a + a + a$ equals

   Ⓐ a^3 Ⓑ $3a^2$ Ⓒ $3a$ Ⓓ $3a^3$ ☐1

2 $2x + 3x$ equals

   Ⓐ $5x^2$ Ⓑ $6x^2$ Ⓒ $6x$ Ⓓ $5x$ ☐1

3 $6x - 2x$ equals

   Ⓐ 4 Ⓑ $4x$ Ⓒ $4x^2$ Ⓓ x ☐1

4 $5 \times a \times c \times c$ equals

   Ⓐ $5ac$ Ⓑ $5a^2c$ Ⓒ $5ac^2$ Ⓓ $5ac^3$ ☐1

5 $a + a + a + b + b$ equals

   Ⓐ $a^3 + b^2$ Ⓑ $3a + 2b$ Ⓒ $3a^3 + 2b^2$ Ⓓ $a^2 + ab + b$ ☐1

6 5 less than x is

   Ⓐ $x - 5$ Ⓑ $5 - x$ Ⓒ $5x - 1$ Ⓓ $5x + 1$ ☐1

7 $3 \times x + 4 \times y$ equals

   Ⓐ $x^3 + y^4$ Ⓑ $12xy$ Ⓒ $3x + 4y$ Ⓓ $7xy$ ☐1

8 If $a = 2$ and $b = 3$ then $2a + 3b$ equals

   Ⓐ 12 Ⓑ 13 Ⓒ 25 Ⓓ 36 ☐1

9 If $x = 3$ then $3x - x^2$ equals

   Ⓐ 9 Ⓑ 0 Ⓒ 27 Ⓓ 1 ☐1

10 When $2x$ is added to the sum of $3x$ and $5y$ then the result is

   Ⓐ $6x^2 + 5y$ Ⓑ $3x + 10y$ Ⓒ $30x^2y$ Ⓓ $5x + 5y$ ☐1

11 If $3y = 15$ then y equals

   Ⓐ 3 Ⓑ 5 Ⓒ 15 Ⓓ 45 ☐1

12 $a^4 \times a^7$ equals

   Ⓐ a^{28} Ⓑ a^{47} Ⓒ a^{11} Ⓓ a^3 ☐1

Total marks achieved for PART A ⬚12

Algebra

Unit Test

PART B

Instructions
This part consists of 15 questions
Each question is worth 1 mark
Write answers in the answers-only column

Time allowed: 20 minutes

Total marks = 15

Questions	Answers only	Marks
1 Simplify $2 \times a \times 7 \times b$	_____	1
2 Simplify $5x + 3y - 2x - y$	_____	1
3 Write in a shorter way $5 \times 6(3 \times a - 2)$	_____	1
4 If $a = 5$ find $2a^2$	_____	1
5 If $x = 3$ and $y = 5$ find $2x + 3y$	_____	1
6 Find the sum of $2x$, $3y$ and 8.	_____	1
7 To the sum of $5x$ and y add $3y$	_____	1
8 Divide $2a$ by b and then add 7 to it.	_____	1
9 Write in a shorter way 11 plus x, all divided by 5.	_____	1
10 What is the difference between a and b, divided by the sum of a and b?	_____	1
11 What is the product of 4, p and 3?	_____	1
12 What is $2m$ subtracted from the product of m and n?	_____	1
13 Simplify $5x^3 \times 4x^2$	_____	1
14 Simplify $\dfrac{a^5 \times a^3}{a^2}$	_____	1
15 Expand $5(3x + 7)$	_____	1

Total marks achieved for PART B   15