WORKSHEET 2 FURTHER ALGEBRA - CHAPTER 13

WHY DID THE GURU REFUSE THE DENTIST'S NEEDLE?

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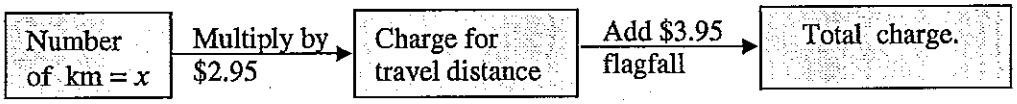
1 Write an algebraic expression to represent each of these quantities.

(a) There were x people in the queue outside the theatre and then 3 more arrived. How many are now in the queue?

(b) For \$25 you get y minutes on the go cart track. So far Aldo has been racing for 30 minutes. How much longer does he have to go?

2 A taxi charges by the km plus a fixed amount called a flagfall. Let the distance travelled on a particular journey be x km.

Here is a flow chart to calculate the total hiring charge.



(a) Write an expression in terms of x for the total charge for travelling x km?

(b) For 5 km, $x = 5$. What is the total charge for 5 km?

3 Find the value of the following expressions for the given value of the pronumeral.

(a) $3y + 8$ if $y = 4$ (b) $6x - 3$ if $x = 5$ (c) $3a + 11$ if $a = 4$

4 Find the value of the following expressions for the given value of the pronumeral.

(a) $\frac{y}{4} - 6$ if $y = 8$ (b) $\frac{g}{2} + 7$ if $g = 4$ (c) $\frac{h}{3} - 7$ if $h = 6$

5 Write an algebraic expression to represent these number statements.

(a) I am 4 years younger than the average age of my two sisters. If the sum of their ages is x years, write an expression for my age.

(b) For the sausage sizzle we bought k loaves of bread and it worked out that this just went round 1 piece of bread for each of the 400 sausages. Write an expression for the number of slices of bread in each loaf.

6 Simplify these expressions

(a) $x^2 \times x^7$ (b) $d^2 \times d^3 \times d^4$ (c) $3a^4 \times 5a^2$

7 Simplify these expressions

(a) $15e^7 \div 3e^2$ (b) $12t^5 \div 3t^3$ (c) $16y^4 \div 8y^2$

8 Simplify these expressions

(a) $ax^3 \div ax$ (b) $bx^3 \times b^2x \div bx^2$ (c) $9bh \times 4bh^2 \div 6bh^2$

9 Find the value of these expressions for the given value of the pronumeral.

(a) Find $(x + 5)$ when $x = -2$; $x = -3$; $x = -5$

(b) Find (a) $- 7)$ when $a = -1$; $a = -8$; $a = -6$

(c) Find $(-6 + t)$ when $t = -6$; $t = -2$; $t = -8$

10 Simplify these expressions

(a) $(-3x)\times 2y =$ (b) $(-2a)\times(-5b) =$ (c) $(-3a)\times(-2y)\times(-5t) =$

11 At the newsagent Focal magazine was \$2 less than Horror. Horror was \$4 less than Beautiful. Horror was selling at \$*b*. They sold 6 Horror magazines, 4 Focal magazines and 7 Beautiful magazines.

(a) Write down an expression for the total cost of the Focal magazines.

(b) Write down an expression for the total cost of the Beautiful magazines.

(c) Write an expression for the cost of all the magazines sold.

12 Expand these brackets.

(a) $y(y + 2)$ (b) $2x(x - 3)$ (c) $5t^2(2t+1) =$

13 Simplify the following by first converting them to equivalent fractions with a common denominator.

(a) $\frac{x}{2}+\frac{3x}{4}$ (b) $\frac{2y}{3}-\frac{2y}{5}$ (c) $\frac{3c}{5}+\frac{4c}{7}$

14 By substituting some values, select which one of these answers is the correct one.

(a) $2x+5+3x-2 =$ A $5x-7$ B $5x+3$ C $5x-3$

(b) $3(2y+2)+2(3y-4) =$ A $12y+2$ B $12y+14$ C $12y-2$

15 Solve the following equations.

(a) $6a-7=23$ (b) $2y-11=33$ (c) $5x-13=22$

16 Quick swap are offering a new CD for any 5 traded in plus \$8 or you can just buy it for \$28. Form an equation and solve it to find the value of a traded CD.

Answers:

A	C	D	E	G	H	I	L	M	N
20 27 23	x^9 d^9 $15a^6$	\$ $4b$-8 \$ $7b+28$ \$$17b+20$	$5e^5$ $4t^2$ $2y^2$	2.95x+3.95 \$18.70	$-6xy$ $10ab$ $-30ayt$	5 22 7	y^2+2y $2x^2-6x$ $10t^3+5t^2$	-4 9 -5	x^2 b^2x^2 $6bh$

O	R	S	T	W	Y
$5x+3$ $12y-2$	$5x+8=28$ \$4	$x+3$ $y-30$	$\frac{10x}{8}, \frac{4y}{15}, \frac{41c}{35}$	$\frac{x}{2}-4$ $\frac{400}{k}$	3, 2 ,0 –8, –15, –13 –12, –8, –14

10 7 5 3 1 13 16 9 15 8 2 13 14 13 16 3 8 1 6 7 8 11

11 7 8 13 3 12 4 7 13 15 6 3 13 15 14 8

ANSWERS

BRILLIANT

WORKSHEET 2 FURTHER ALGEBRA - CHAPTER 13

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1 Write an algebraic expression to represent each of these quantities.

(a) There were x people in the queue outside the theatre and then 3 more arrived. How many are now in the queue? $x+3$ ✓

(b) For \$25 you get y minutes on the go cart track. So far, Aldo has been racing for 30 minutes. How much longer does he have to go?

2 A taxi charges by the km plus a fixed amount called a flagfall. Let the distance travelled on a particular journey be x km.

Here is a flow chart to calculate the total hiring charge.

Number of km = x	→ Multiply by \$2.95 →	Charge for travel distance	→ Add \$3.95 flagfall →	Total charge,

(a) Write an expression in terms of x for the total charge for travelling x km? $2.95x + 3.95$ ✓

(b) For 5 km, $x = 5$. What is the total charge for 5 km? \$18.70 ✓

$$\begin{array}{r} {}^{4}{}^{2} \\ 2.95 \times \\ 5 \\ \hline 14.75 + \\ 3.95 \\ \hline 18.70 \end{array}$$

3 Find the value of the following expressions for the given value of the pronumeral.

(a) $3y+8$ if $y=4$ $3\times4+8=20$ ✓ (b) $6x-3$ if $x=5$ $30-3=27$ ✓ (c) $3a+11$ if $a=4$ $12+11=23$ ✓

4 Find the value of the following expressions for the given value of the pronumeral.

(a) $\frac{y}{4}-6$ if $y=8$ -4 ✓ (b) $\frac{g}{2}+7$ if $g=4$ 9 ✓ (c) $\frac{h}{3}-7$ if $h=6$ -5 ✓

5 Write an algebraic expression to represent these number statements.

(a) I am 4 years younger than the average age of my two sisters. If the sum of their ages is x years, write an expression for my age. $\frac{x}{2}-4$ ✓

(b) For the sausage sizzle we bought k loaves of bread and it worked out that this just went round 1 piece of bread for each of the 400 sausages. Write an expression for the number of slices of bread in each loaf. $400 \div k$ ✓

6 Simplify these expressions

(a) $x^2 \times x^7$ x^9 ✓ (b) $d^2 \times d^3 \times d^4$ d^9 ✓ (c) $3a^4 \times 5a^2$ 8^6 ✗ $15a^6$

7 Simplify these expressions

(a) $15e^7 \div 3e^2$ $\frac{15e^7}{3e^2} = 5e^5$ ✓ (b) $12t^5 \div 3t^3$ $\frac{12t^5}{3t^3} = 4t^2$ ✓ (c) $16y^4 \div 8y^2$ $\frac{16y^4}{8y^2} = 2y^2$ ✓

8 Simplify these expressions

(a) $ax^3 \div ax$ $\frac{ax^3}{ax} = x^2$ ✓ (b) $bx^3 \times b^2x \div bx^2$ b^2x^2 ✓ (c) $9bh \times 4bh^2 \div 6bh^2$ $\frac{36b^2h^3}{6bh^2} = 6bh$ ✓

9 Find the value of these expressions for the given value of the pronumeral.

(a) Find $(x+5)$ when $x=-2$; $x=-3$; $x=-5$ 3, 2, 0 ✓

(b) Find $(a-7)$ when $a=-1$; $a=-8$; $a=-6$ -8, -15, -13 ✓

(c) Find $(-6+t)$ when $t=-6$; $t=-2$; $t=-8$ -12, -8, -14 ✓

10 Simplify these expressions

(a) $(-3x)\times 2y = -6xy$ ✓ (b) $(-2a)\times(-5b) = 10ab$ ✓ (c) $(-3a)\times(-2y)\times(-5t) = -30ayt$ ✓

11 At the newsagent Focal magazine was \$2 less than Horror. Horror was \$4 less than Beautiful. Horror was selling at \$*b*. They sold 6 Horror magazines, 4 Focal magazines and 7 Beautiful magazines.

(a) Write down an expression for the total cost of the Focal magazines. $4b-8$ ✓

(b) Write down an expression for the total cost of the Beautiful magazines. $7b+28$ ✓

(c) Write an expression for the cost of all the magazines sold. $17b+20$ ✓

} Excellent work!

12 Expand these brackets.

(a) $y(y+2)$ y^2+2y ✓ (b) $2x(x-3)$ $2x^2-6x$ ✓ (c) $5t^2(2t+1) = 10t^3+5t^2$ ✓

13 Simplify the following by first converting them to equivalent fractions with a common denominator.

(a) $\frac{x}{2}+\frac{3x}{4}$ $\frac{4x}{8}+\frac{6x}{8}=\frac{10x}{8}=\frac{5x}{4}$ ✓ (b) $\frac{2y}{3}-\frac{2y}{5}$ $\frac{10y}{15}-\frac{6y}{15}=\frac{4y}{15}$ ✓ (c) $\frac{3c}{5}+\frac{4c}{7}$ $\frac{21c}{35}+\frac{20c}{35}=\frac{41c}{35}$ ✓

14 By substituting some values, select which one of these answers is the correct one.

(a) $2x+5+3x-2=$ $5x+3$ ✓

A $5x-7$

B $5x+3$ ✓

C $5x-3$

(b) $3(2y+2)+2(3y-4)=$

A $12y+2$

B $12y+14$ ✓

C $12y-2$

15 Solve the following equations.

(a) $6a-7=23$ $23+7=30$ $6a=30$ $a=5$ ✓ (b) $2y-11=33$ $2y=33+11=44$ $y=22$ ✓ (c) $5x-13=22$ $5x=22+13$ $5x=35$ ✓ $x=7$ ✓

16 Quick swap are offering a new CD for any 5 traded in plus \$8 or you can just buy it for \$28.

Form an equation and solve it to find the value of a traded CD. $5x+8=28$ $5x=28-8=20$ $x=4$ ✓

Answers:

A	C	D	E	G	H	I	L	M	N
20 27 23	x^9 d^9 $15a^6$	\$ $4b$-8 \$ $7b+28$ \$ $17b+20$	$5e^5$ $4t^2$ $2y^2$	2.95x+3.95 \$18.70	$-6xy$ $10ab$ $-30ayt$	5 22 7	y^2+2y $2x^2-6x$ $10t^3+5t^2$	-4 9 -5	x^2 b^2x^2 $6bh$

O	R	S	T	W	Y
$5x+3$ $12y-2$	$5x+8=28$ \$4	$x+3$ $y-30$	$\frac{10x}{8}, \frac{4y}{15}, \frac{41c}{35}$	$\frac{x}{2}-4$ $\frac{400}{k}$	3, 2 ,0 –8, –15, –13 –12, –8, –14

10 7 5 3 1 13 16 9 15 8 2 13 14 13 16 3 8 1 6 7 8 11

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