GRAYS TUITION CENTRE – Online Tutoring

WEEK: 10

Week Beginning: (22/02/2021)

Subject: MATHS

Year: 5 (11+)

Lesson Objective:

- Understanding how to approach different types of algebra questions
- Be able to develop understanding on method needed to answer questions relating to algebra

Class Worksheets

Lesson 1:

- Start off by going through homework
- Then attempt Assessment corrections
- Begin Algebra questions

Lesson 2:

- Progress through algebra worksheets

Homework

- Complete the assigned homework

Additional Notes

- All lesson worksheets and **homework for next week (due Week 11)** worksheets can be found below
- Week 9 homework will be marked in lesson hence make sure it is fully complete

Please print 2 a page or open this document during the lesson to save paper!

Lesson 1:

a. Homework corrections
b. Assessment questions
c. Algebra introduction

Starter:

What is Algebra?

Why are letters used?

Am I able to substitute, solve equations and solve word problems?

1.Substitution:

Name : _____ Score : _____

Teacher : _____ Date : _____

Simplifing Algebraic Expressions

1) $h + 3h$ use $h = 4$

2) $\frac{h}{-4} + 2$ use $h = -12$

3) $-5(2x + 6)$ use $x = -3$

4) $-9h + 6(8 + 4h)$ use $h = -6$

5) $7 - \frac{f}{4} + 6f$ use $f = 16$

6) $-7(-3 - 2r)$ use $r = -3$

7) $2 - \frac{r}{-3}$ use $r = -6$

8) $-4(-9 - 5x) + 6$ use $x = 9$

9) $6x + 3x - 9$ use $x = 6$

10) $4f - f$ use $f = 9$

Math-Aids.Com

Algebra (answers)

Task 1

If a = 5, b = 3 and c = 1, solve these equations;

1. 3a + b = 18 2. 2b – c = 5 3. a + 3b = 14

4. 2b – 2c = 4 5. a – b – c = 1 6. 5b + 7c = 22

7. 4a ÷ 2 = 10 8. 10c x 10 = 100 9. 6b + 3c + 8a = 61

Task 2

Simplify these equations;

Example - a + a + a simplified is 3a. c + c – f simplified is 2c – f

10. h + h + h + h = 4h 11. 3 x f = 3f 12. b x b x b = b^3

13. g + g – g = g 14. d + f + d + f = 2d + 2f 15. (a + a + a) x (b + b) = 6ab

16. d x f x d x f = d^2f^2

Task 3

If X = 9, what is Y?

17. X + Y = 13 Y = 4 18. Y + X = 18 Y = 9 19. 2X + Y = 20 Y = 2

20. 2X + Y = 25 Y = 7 21. 3X + Y = 50 Y = 23

Substituting into an expression

1. Substitute these values into each expression; a = 5, b = 2

a. $a + b$

b. $a - b$

c. $2a + 3b$

d. $5a - b$

2. Substitute these values into each expression; x = 4, y = 7, z = 2

a. $x + y + z$

b. $2x - y + 3z$

c. $4y + 2z - x$

d. $x^2 + 7y + 5x$

3. Substitute these values into each expression; m = -2, n = 4, p = 3, q = -8

a. $m + n$

b. $p + q - 2n$

c. $2q - p$

d. $3m - 2q$

e. $m^2 + 4p + q$

4. Find the value of each expression using the values given.

a. $^{x}/_{2} + 4y$ x = 10, y = 2

b. $3(p + 2q)$ p = 8, q = 3

c. $m + n\,(q + 3)$ m = 4.5, n = 6, q = -1

d. $(u + v)^{x}$ u = 7, v = -4, x = 4

Homework: (for lesson 2)

Name Date

CALCULATE THE EXPRESSION SHEET 3

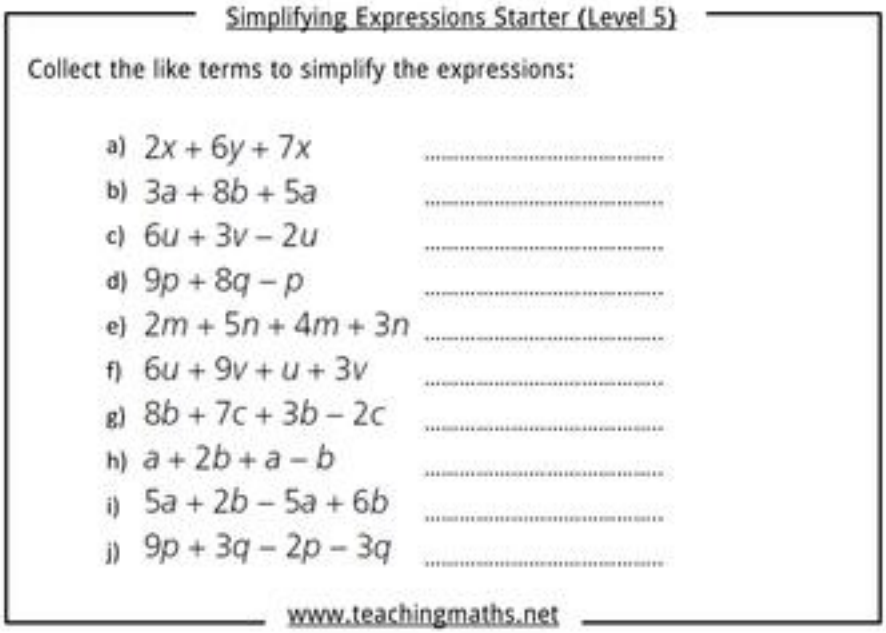
Calculate the value of each expression given the value of the variables.

	CALCULATE	WHEN	ANSWER
1)	$2a-3$	$a=5$	$2\times5-3=7$
2)	$3b+4$	$b=5$	
3)	$c-10$	$c=7$	
4)	$5d-3$	$d=20$	
5)	$3(e+4)$	$e=-1$	
6)	$7(f-2)$	$f=10$	
7)	$\frac{1}{2}(g+2)$	$g=4$	
8)	$(h-2)/3$	$h=11$	
9)	i^2	$i=5$	
10)	j^2-5	$j=3$	
11)	$3(5-k)$	$k=2$	
12)	$\frac{1}{4}l-7$	$l=16$	
13)	$(m-4)/3$	$m=10$	
14)	$12/(n+4)$	$n=2$	
15)	o^3	$o=3$	
16)	$(p-1)^2$	$p=8$	
17)	$(q+4)^2$	$q=2$	
18)	$6(r+5)$	$r=-3$	
19)	$s/7-6$	$s=21$	
20)	$t/(7-6)$	$t=5$	
21)	$u(4+3)$	$u=2$	
22)	$(v-5)\div6$	$v=23$	
23)	$(2w-3)\div4$	$w=2$	
24)	$(x+2)^2$	$x=10$	
25)	$\sqrt{y}$	$y=36$	

Lesson 2:

2.Solving Equations:

a. Expanding brackets and collecting like terms:



Simplifying Expressions Starter (Level 5)

Collect the like terms to simplify the expressions:

a) $2x + 6y + 7x$ .....

b) $3a + 8b + 5a$ .....

c) $6u + 3v - 2u$ .....

d) $9p + 8q - p$ .....

e) $2m + 5n + 4m + 3n$ .....

f) $6u + 9v + u + 3v$ .....

g) $8b + 7c + 3b - 2c$ .....

h) $a + 2b + a - b$ .....

i) $5a + 2b - 5a + 6b$ .....

j) $9p + 3q - 2p - 3q$ .....

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9. Find the value of x for each of the following equations:

(a) $5x - 8 = 27$

Answer ..... [1 mark]

(b) $5(2x + 4) = 50$

Answer ..... [2 marks]

(c) $12x = 5x + 28$

Answer ..... [2 marks]

(d) $\frac{5x}{4} + 3 = 13$

Answer ..... [2 marks]

L5
Progression : Light

Solving Linear Equations (B)

Solve the equations to find x.

Section A

1) $7x+9=23$
2) $5x+7=42$
3) $4x+3=51$
4) $9x+5=41$
5) $4x+2=34$
6) $11x+3=36$
7) $10x+2=72$
8) $7x+3=52$
9) $6x+5=17$
10) $4x+7=9$
11) $8x+11=15$
12) $4x+17=18$

Section B

1) $1+6x=19$
2) $9+7x=30$
3) $3+2x=17$
4) $11+5x=71$
5) $5+3x=32$
6) $4+5x=44$
7) $23=x+8$
8) $28=3x+1$
9) $53=8x+5$
10) $13=11+4x$
11) $7=8x+3$
12) $12=7+15x$

Section C

1) $4x-1=31$
2) $3x-4=29$
3) $6x-5=31$
4) $8x-2=46$
5) $2x-7=21$
6) $7x-3=18$
7) $9x-4=32$
8) $5x-1=64$
9) $12x-9=39$
10) $2x-1=2$
11) $4x-8=10$
12) $15x-2=3$

Section D

1) $x-3=-2$
2) $x-5=-1$
3) $x-6=-4$
4) $x+3=2$
5) $x+9=4$
6) $x+10=-5$
7) $2x-3=-9$
8) $2x-10=-2$
9) $2x-18=-20$
10) $2x+5=1$
11) $2x+14=4$
12) $2x+11=-5$

Section E

1) $5-x=2$
2) $9-x=5$
3) $6-x=3$
4) $8-x=14$
5) $2-x=15$
6) $7-x=21$
7) $3-2x=5$
8) $5-2x=15$
9) $8-2x=12$
10) $2-3x=14$
11) $6-3x=27$
12) $16-5x=61$

Section F

1) $3x-1=14$
2) $x-4=-3$
3) $3+2x=17$
4) $7x-6=50$
5) $1-x=6$
6) $8+5x=63$
7) $16-2x=40$
8) $34=6-4x$
9) $34=-6+5x$
10) $6+11x=-5$
11) $-29=3+4x$
12) $6x+13=25$
13) $3-2x=5$
14) $8x+42=-54$
15) $6x-16=-70$
16) $-9-4x=-53$

3.Word-problems:

Question 26

Steve wants to hire a storage unit, the storage company charges a fixed charge of £28 plus rental charge of £33 per week.

a) Using **C** for the total cost in pounds and **w** for the number of weeks the unit is hired, write a formula to calculate the total cost of hiring the storage unit.

Answer _____

b) He wants to hire the storage unit for 12 weeks, calculate the total cost of hiring the unit for 12 weeks.

Answer _____

c) Steve actually paid £688 how many weeks did he hire the storage unit for?

Answer _____

[3 Marks]

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16. Nancy bought five oranges and two apples and they cost £3.40. At the same shop, David bought three oranges and one apple and paid £2.00. What would Steve have paid if he bought four oranges and two apples from this shop?

16	£

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7. The distance, **d**, in metres, travelled by any vehicle accelerating at a rate **A**, in **t** seconds is given by the formula

$$d = A \times t^2 \div 2 \quad \text{or} \quad d = A \times t \times t \div 2$$

(a) Find the distance travelled by a car accelerating at a rate of 8 for 3 seconds.

7a	m

(b) Find the distance travelled by a space rocket accelerating at a rate of 20 for **2 minutes.**

7b	m

(c) A motorbike travels 270 metres in 6 seconds. What is its rate of acceleration?

7c	

(d) A truck travels 50 metres while accelerating at a rate of 4. How long does this take?

7d	secs

[8 marks]

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40. Oni has 11 penpals. Last week she wrote to all of them.
She wrote a 4-page letter to some of her penpals and a 3-page letter to the rest. Altogether she wrote 38 pages.

To how many penpals did Oni write a 3-page letter ?

Answer: .....

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20. Suki buys 500g of sugar at £1.10 per kilogram and 750g of plain flour at £1.12 per kilogram. How much change did she receive from a £5 note?

Answer: .....

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21. a) A group of 30 adults and 16 children paid £408 in total to watch a football match. Each child ticket cost £3.

What was the cost of each adult ticket?

£..... (3 marks)

b) In a sale, prices are reduced by 15%.

What is the sale price of a hoody that originally cost £30?

£..... (2 marks)

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7. a) The sum of three consecutive whole numbers is 60.

What is the largest of the three numbers?

…….. (2 marks)

b) What is the smallest positive whole number that divides exactly by

1, 2, 3, 4 and 5?

…….. (3 marks)

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22. (c) Jack thinks of a number.
Jack calls his number *n*.
Jack multiplies his number by 3, and then subtracts 5
He gets the answer 16
Use this information to write down an equation, and then solve it to find *n*.

Answer: *n* = ... (2)

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22. (a) Annie and Bradley each think of a number.
The difference between their numbers is 6
The sum of their numbers is 20

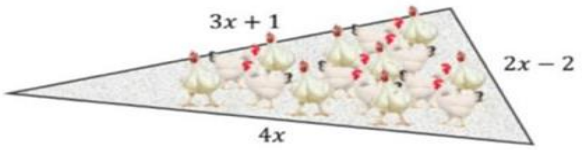
What are the two numbers?

Answer: ..... and..... (1)

(b) Alice thinks of a number.
Alice calls her number *a*.
Alice adds 7 to her number, and then doubles her answer.
Write an expression, using *a*, to show what Alice does.

Answer: ..... (2)

HOMEWORK:

17.	When x = 1.5 what is the value of the **perimeter** of this triangular area? 			
	A. 12	**B. 12.5**	**C. 13**	**D. 13.5**
	Working out:			

22a. I am thinking of a number.

If I add 5 to it and then divide by 2, I get 6.

What number am I thinking of? ..... [2]

22b. Solve the following equation to find x.

5x – 7 = 43 ..... [2]

Solve These Equations.

1. a + 4 = 7

2. 2x + 4 = 8

3. 2b + 3 = 9

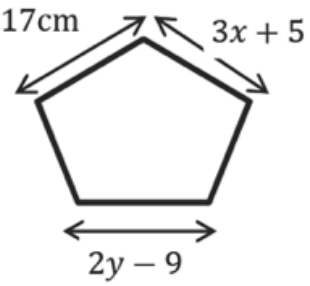
4. 4x - 6 = 14

5. 6b - 2 = 10

6. 5a - 4 = 16

25) The diagram shows a regular pentagon.

(a) Find the value of x.



.....[2]

(b) Find the value of y. .....[2]

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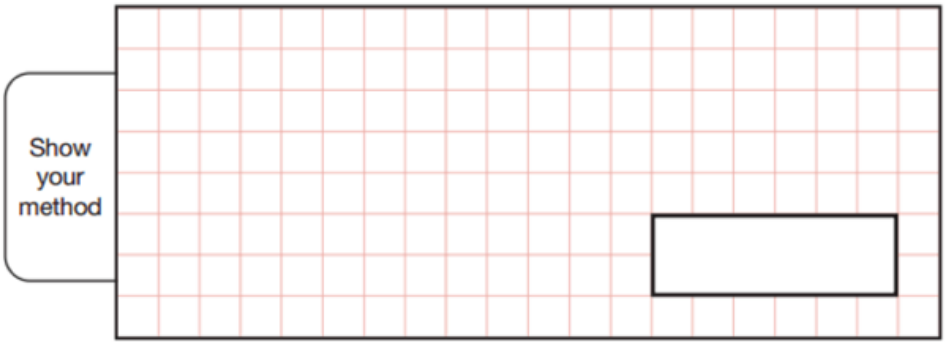
28. Martha and Sally each have the same amount of money.

If Martha spends £10 and Sally spends £20, then Martha has three times as much as Sally.
If Martha spends £15 and Sally spends £20, then Martha has twice as much as Sally.

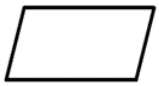
How much money do they have altogether?



(4)

Name Date

MENTAL MATHS QUIZ 5:8

1)	Find 6/7 of 35	
2)	Write seven-tenths and two-hundredths as a decimal.	
3)	Add 0.4, 0.7 and 1.2	
4)	What is the **mode** of 14, 12, 8, 10, 12, 9, 11?	
5)	Round 6.398 to the nearest whole number	
6)	How many quarters make 2½?	
7)	What 3d shape is this the net for? 	
8)	Which of these **quadrilaterals** is a kite? Tick the shape(s) A  B  C  D 	
9)	How many sides does a heptagon have?	
10)	A 3kg joint of lamb needs to be cooked for 25 minutes per 500g plus an extra 20 minutes. How long does it need cooking for?	__h ___min
11)	Work out 72 ÷ (4 ½ + 7 ½)	
12)	The diameter of Pluto is 1430 miles. What is the radius?	
13)	Write the time 16:25 in 12-hour clock time.	
14)	The area of a square is 36cm^2. What is the perimeter of the square?	
15)	A long piece of ribbon measures 1m. I cut off 10 pieces each measuring 8.5cm. How much of the ribbon is left?	
16)	How many 5p coins would I need to make £2.30?	