Benjamin Britten Academy of Music and Mathematics

# **MATHEMATICS HOMEWORK BOOKLET**

# Year 8 Book A AUTUMN TERM



NAME:



#### **How does it work?**

- One homework will be seta week
  - The set and due date for each homework will be written on this page
- Some homework will need completing on this booklet, others on the internet
  - If you need help logging onto a website, you need to see your class teacher
- If you need help with the homework task, you must speak to your teacher before the due date

# **CONTENTS**

WEEK	HOMEWORK TITLE
1	Four Operations
2	Simplifying algebra
3	Research task
4	Negative numbers
5	Solving equations
6	Mathswatch
7	Inequalities
8	Fractions
9	Research task
10	Substitution
11	Area and perimeter

# Log in details:

Below are the log in instructions you will need in order to access and complete some of the homework tasks in this booklet.

#### Mathswatch

Username—firstnamelastname@benjamin
Password—your DOB (format: monthDYYYY)

#### **Completing your homework**

All homework tasks need to be completed in this booklet or on a specific website.

There are also **answers** for all booklet tasks at the back of the booklet. Part of your homework task each week is to **mark your work**. Make sure you mark all your answers in another colour pen, making any corrections if you need to.

<u>Remember</u> - if you need help, you must speak to your teacher **before** the due date.



If you see the logo above next to a task, you can type the clip number into Mathswatch for extra help!

Watch the video and make notes, then try the homework task again. If you still need help, then speak to your maths teacher at school.





# **HOMEWORK 1:** FOUR OPERATIONS

#### Recall and Recap: Core operations skills

Work out, without a calculator

1 3200 – 1593

 $2 7.18 \times 8$ 

3 314×9

 $4 \quad 0.8 \times 10000$ 

5 87 × 30

6 22.4 ÷ 8

7 62 ÷ 1000

8 39 × 400

9 3684 + 2153

10  $0.0654 \div 3$ 

11 0.82 – 0.157

12 840 ÷ 12

13 12.74 ÷ 7

14 56 × 43

15  $30 \times 25$ 

 $16 \quad 7.4 \times 1000$ 

17 928 ÷ 32

0.183 + 6 + 0.24

19 688 ÷ 43

 $20 42 \times 300$ 

21 429 × 67

22 7 – 3.014

23 144000 ÷ 60

24 429 × 73

Write your answers below:



Apply your core skills to the challenge questions below...



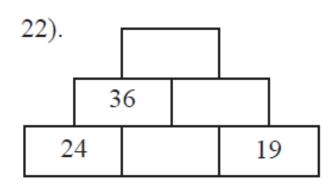
$$3.9 + \boxed{\phantom{0}} = 6.34$$

$$-0.19 = 0.34$$

$$0.28 \div \boxed{\phantom{0}} = 0.0028$$

$$\times$$
 0.5 = 1.69

$$+2.91 = 10.15$$





# **HOMEWORK 2:** SIMPLIFYING ALGEBRA

# Skills practice: Collecting like terms

Find two matching pairs of expressions

A 
$$1 + 2m + 3$$

B 
$$2 + m + 4m - 1$$

C 
$$2 + 6m - 3m - 1$$

D 
$$7m + 1 - 2m$$

E 
$$5m + 4 - 3m$$

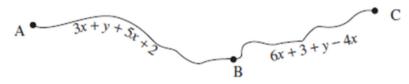
2 Simplify the following.

(a) 
$$3m + 7 - 8m$$

(b) 
$$3y + 2x - y - 1$$

(b) 
$$3y + 2x - y - 1$$
 (c)  $6m + 3 - 5m - 2n + n$ 

Find an expression for the total distance from A to C.



Multiply out the brackets.

(a) 
$$4(m+3)$$

(b) 
$$9(2p-1)$$

(b) 
$$9(2p-1)$$
 (c)  $3(w+3q)$  (d)  $5(a-3b)$ 

(d) 
$$5(a-3b)$$

5 Copy and complete the following.

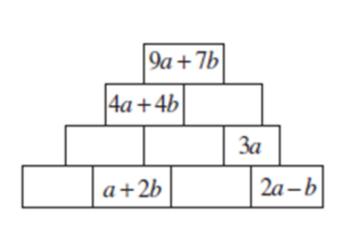
(a) 
$$4(\Box + 1) = 8a + 4$$

(b) 
$$(2m-3n) = 12m -$$

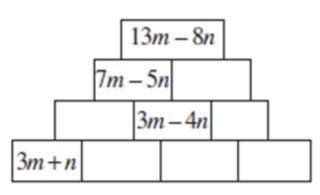


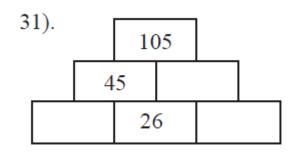


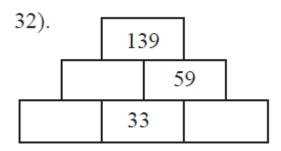
#### Apply your core skills to the challenge questions below...

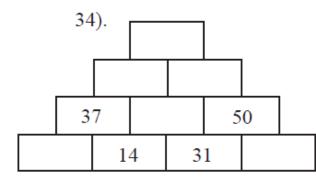


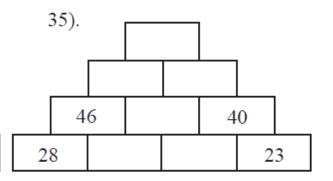














# **HOMEWORK 3:** RESEARCH TASK

# The Eye of Horus

In Ancient Egypt, Horus was represented as the falcon-headed god. He was the ultimate god of mathematics.

All Egyptian fractions were unit fractions like  $\frac{1}{2}$ ,  $\frac{1}{3}$  and  $\frac{1}{8}$ .

The eye of Horus represented the sacred unit fractions. The 'eye of Horus' symbol was used to protect from evil.



#### RESEARCH:

- (a) Find out more about the god Horus.
- (b) Find out how the Egyptians represented the fraction  $\frac{1}{3}$ .

# Research task:



Present your findings for the research task in the box below.

You could draw a storyboardthe o		reate a	



# **HOMEWORK 4:** NEGATIVE NUMBERS

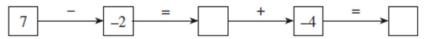
# Recall and Recap: Negative number skills

- Work out 1
  - (a) 8 (+3)
- (b) 6 + (-5)
- (c) 1 + (-3)
- (d) 5 (-4)

- (e) 4 (-1)
- (f) 7 + (-6)
- (g) -3 (-2)
- (h) -2 + (-4)

- 2 What is the difference between –19 and 17?
- Write down the next three numbers in this sequence.

- What is the sum of -6, 9, -8 and -15?
- 5 Copy and complete this number chain.



- Work out
  - (a) 13 (+18)
- (b) 27 + (-16)
- (c) -14 (-30)
- (d) 43 (+60)

- (e) -32 + 24
- (f) -29 + (-12) (g) 53 (-19)
- (h) -16 (+35)

Write your answers below:



Apply your core skills to the challenge questions below...

×				9
			35	
			21	
4		8		
	48	16		

×		8	
			8
7			
	54		18
	18		

×		4		
	18			
	6		24	21
			48	
		20		

×			6	
		35		
		40		16
	36			8
		15		

×	-5		
		-9	6
4			-8
	35		



# **HOMEWORK 5:** SOLVING EQUATIONS

# **Skills practice: Solving equations**

Solve the equations.

1 
$$6a = 48$$

2 
$$4y - 15 = 21$$
 3  $5p + 9 = 39$ 

$$5p + 9 = 39$$

$$4 8c - 17 = 15$$

$$6m - 30 = 42$$
  $6$   $3n + 23 = 38$ 

$$6 \quad 3n + 23 = 38$$

7 
$$4a + 16 = 36$$

$$9y - 13 = 59$$

9 
$$8x - 6 = 2$$

10 
$$6n - 85 = 35$$

11 
$$10m + 26 = 26$$

12 
$$60 = 7y + 39$$

13 
$$4m = 2$$

14 
$$1 = 3y$$

15 
$$\frac{x}{4} = 2$$

Now solve these:

16 
$$4x + 3 = 4$$

17 
$$7 + 4m = 10$$

18 
$$29 = 5y - 1$$
 19  $6 = 4 + 3n$ 

19 
$$6 = 4 + 3n$$

$$9a - 10 = 35$$

20 
$$9a - 10 = 35$$
 21  $6n + 14 = 14$ 

22 
$$6p = 4p + 1$$

22 
$$6p = 4p + 1$$
 23  $17 = 5q - 7$ 

$$24 10x + 3 = 8$$

Write your answers below:



**A12** 



#### Apply your core skills to the challenge questions below...

#### Now solve these:



$$4(3n+1) = 40$$

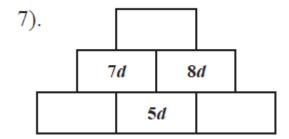
$$90 = 3(n + 10)$$

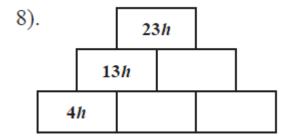
$$15 = 4(2n + 3)$$

$$30 = 2(n+6)$$

$$7(2n-9)=7$$

$$6(4 + 5n) = 114$$







# **HOMEWORK 6: MATHSWATCH**



For this week's homework, your teacher will set you a task to complete on the website Mathswatch. The task will be based on the content you have learnt over the past half term in your maths lessons. You can use the space on the next page to do any working out if you need to.

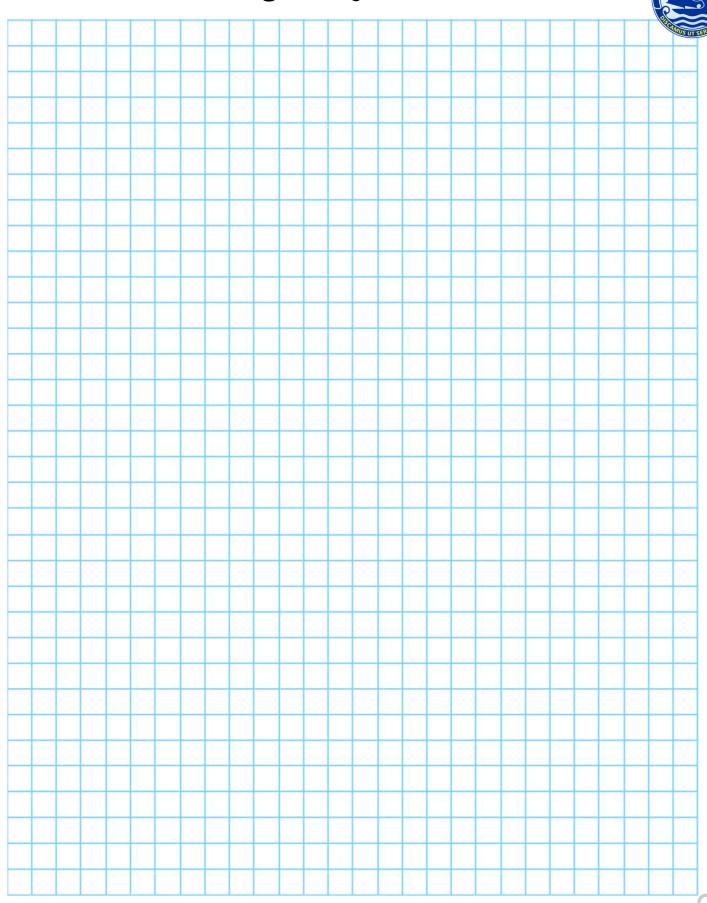
Below are the log in instructions you will need in order to access and complete this homework task.

If you have any issues logging in, you <u>must</u> speak to your class teacher as soon as possible.

Username— firstnamelastname@benjamin
Password— your DOB (format: monthDYYYY)

If you need a printed copy of this homework task, make sure you speak to your class teacher <u>before</u> the due date and they will print a copy for you to complete.

# Additional working out space:





# **HOMEWORK 7:** INEQUALITIES

# Recall and Recap:

Write down the inequalities displayed. Use x for the variable.

(d) 
$$\begin{array}{c} \bullet \\ -2 \end{array}$$
 (e)  $\begin{array}{c} \bullet \\ 0 \end{array}$  (f)  $\begin{array}{c} \bullet \\ 1\frac{1}{2} \end{array}$ 

(f) 
$$\frac{0}{1\frac{1}{2}}$$

(g) 
$$\frac{\bullet}{2}$$
  $\frac{\bullet}{5}$  (h)  $\frac{\bullet}{-1}$   $\frac{\bullet}{4}$  (i)

(j) 
$$\frac{\bigcirc}{\frac{1}{2}}$$
 (k)  $\frac{\bigcirc}{-3}$  3 (l)  $\frac{\bigcirc}{-1}$  6

CCK

Draw a number line to display the following inequalities.

(a) 
$$x > -1$$

(b) 
$$x \le 4$$

(c) 
$$a > -2$$

(d) 
$$n \le 0$$

(f) 
$$-1 \le y$$

(g) 
$$0 \le x \le 10$$

(h) 
$$-2 < t \le 7$$

(i) 
$$-3 \le s < -1$$

Answer true or false:

(b) 
$$-3 < 1$$

(c) 
$$3\frac{1}{2} < 3.25$$

(d) 
$$-6 < -10$$

(f) 
$$1 \text{ kg} > 1 \text{ pound}$$



(h) 
$$2^3 < 3^2$$

Write your answers below:



#### Apply your core skills to the challenge question below...

Solve the inequalities.



$$x-10 \ge 2$$

$$x + 6 < 11$$

$$7 + y < 11$$

$$3 + x \ge 9$$

$$3n \ge 48$$

$$x - 3 < -2$$

$$y + 7 > -7$$

Show your methods here:



# **HOMEWORK 8:** MULTIPLYING AND DIVIDING FRACTIONS

# **Skills practice: Fraction work**

Work out

(a) 
$$\frac{1}{8} \times \frac{4}{5}$$

(b) 
$$\frac{2}{3} \times \frac{6}{7}$$

(c) 
$$\frac{3}{10} \times \frac{5}{6}$$

(d) 
$$\frac{5}{7} \times \frac{1}{10}$$

(e) 
$$\frac{4}{7} \times \frac{7}{8}$$

(f) 
$$\frac{9}{10} \times \frac{5}{12}$$

(g) 
$$\frac{5}{9} \times \frac{6}{7}$$

(b) 
$$\frac{2}{3} \times \frac{6}{7}$$
 (c)  $\frac{3}{10} \times \frac{5}{6}$  (d)  $\frac{5}{7} \times \frac{1}{10}$  (f)  $\frac{9}{10} \times \frac{5}{12}$  (g)  $\frac{5}{9} \times \frac{6}{7}$  (h)  $\frac{7}{12} \times \frac{6}{11}$ 

$$\frac{2}{3}$$
m A  $\frac{9}{10}$ m

Which rectangle has the larger area and by how much?

$$\frac{3}{4}m$$

Work out

(a) 
$$\frac{1}{4} \div \frac{1}{3}$$

(b) 
$$\frac{1}{2} \div \frac{3}{4}$$

(c) 
$$\frac{3}{8} \div \frac{1}{2}$$

(d) 
$$\frac{2}{5} \div \frac{7}{10}$$

(e) 
$$\frac{3}{5} \div \frac{7}{8}$$

(f) 
$$\frac{1}{9} \div \frac{2}{3}$$

(g) 
$$\frac{4}{7} \div \frac{7}{8}$$

(b) 
$$\frac{1}{2} \div \frac{3}{4}$$
 (c)  $\frac{3}{8} \div \frac{1}{2}$  (d)  $\frac{2}{5} \div \frac{7}{10}$  (f)  $\frac{1}{9} \div \frac{2}{3}$  (g)  $\frac{4}{7} \div \frac{7}{8}$  (h)  $\frac{7}{12} \div \frac{3}{4}$ 

A strip of wood is  $\frac{8}{9}$  m long. What is the total length of 12 strips of wood?

Write your answers below:

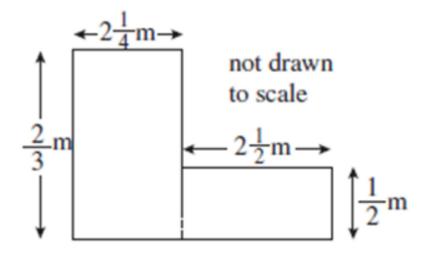


N<sub>42</sub>





Work out the total area of this shape.





# **HOMEWORK 9:** RESEARCH TASK

# Napier's rods

An early calculator was invented by John Napier in the sixteenth century.



#### RESEARCH: Find out:

- (a) When were Napier's rods most widely used?
- (b) In which kinds of jobs were they used?
- (c) How can Napier's rods be used to multiply by 2-digit numbers?
- (d) Can Napier's rods be used for division?

# Research task:



Present your findings for the research task in the box below.

You could draw a poster, write a list of notes, create a storyboardthe options are endless!	



# **HOMEWORK 10: SUBSTITUTION**

# Recall and Recap: Substitution practice

1 
$$a = 4b - 3$$
  
Find a when  $b = 5$ 

$$y = 3x + 12$$
Find y when  $x = 5$ 

5 
$$a = \frac{b}{10} + 4$$
  
Find a when  $b = 30$ 

7 
$$m = 7(4n - 1)$$
  
Find m when  $n = 6$ 

9 
$$y = 3(9x + 2)$$
  
Find y when  $x = 2$ 

$$p = 9w + 7$$
Find p when  $w = 6$ 

4 
$$m = \frac{n}{4} - 8$$
  
Find m when  $n = 48$ 

6 
$$y = 2(6x + 3)$$
  
Find y when  $x = 9$ 

8 
$$a = \frac{8b - 4}{10}$$
  
Find a when  $b = 8$ 

10 
$$p = \frac{w}{7} + 20$$
  
Find p when  $w = 28$ 

Write your answers below:





Apply your core skills to the challenge questions below...

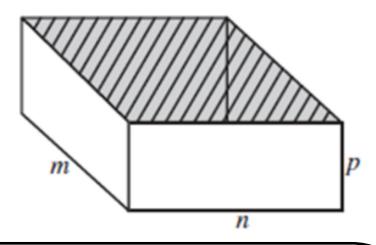
This open box has no top.

The surface area A is given by the formula



$$A = 2np + mn + 2mp$$

Find the value of p if n = 6, m = 7 and A = 146.

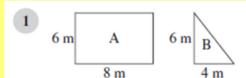


Show your methods here:

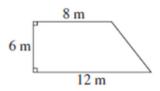


# **HOMEWORK 11:** AREA AND PERIMETER

# Skills practice: Calculating areas and perimeters



- (a) Find the area of shape A.
- (b) Find the area of shape B.
- (c) Find the total area of both shape A and shape B.
- (d) Find the area of this shape.

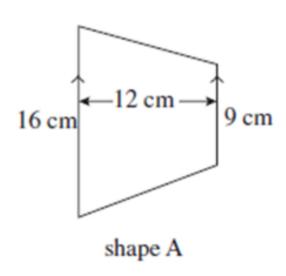


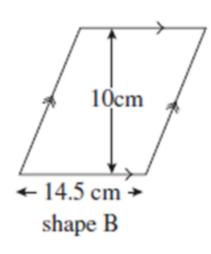
Calculate the shaded area. (all lengths are in cm)

Work out the perimeter of a regular pentagon of side 7 cm.



#### Apply your core skills to the challenge questions below...







Which shape has the larger area and by how much?

Show your methods here:



# **HOMEWORK 12:** MATHSWATCH



For this week's homework, your teacher will set you a task to complete on the website Mathswatch. The task will be based on the content you have learnt over the past half term in your maths lessons. You can use the space on the next page to do any working out if you need to.

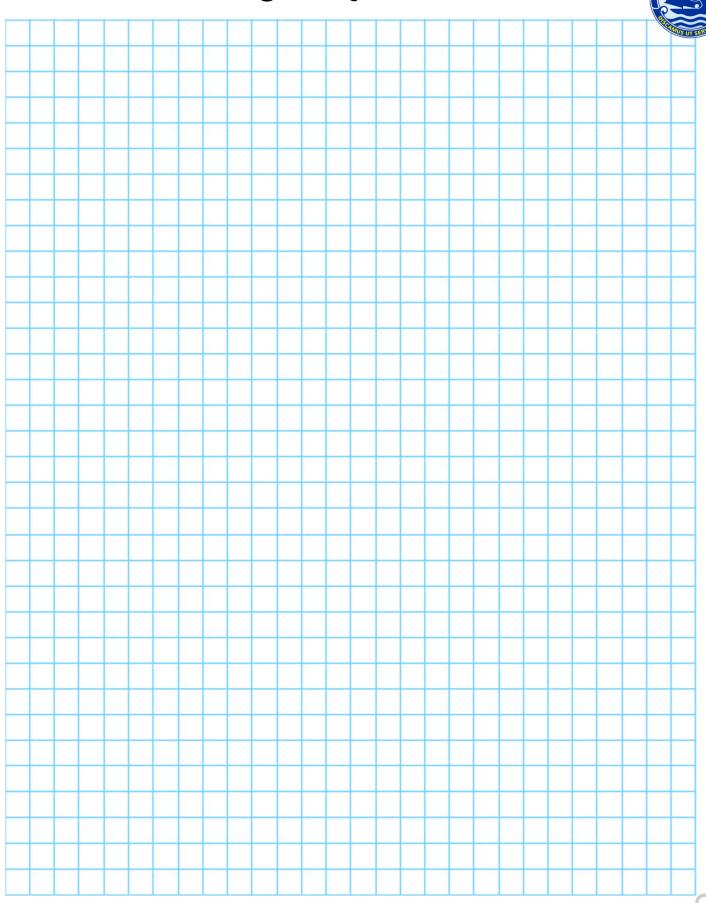
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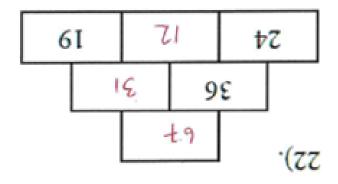
If you need a printed copy of this homework task, make sure you speak to your class teacher <u>before</u> the due date and they will print a copy for you to complete.

# Additional working out space:



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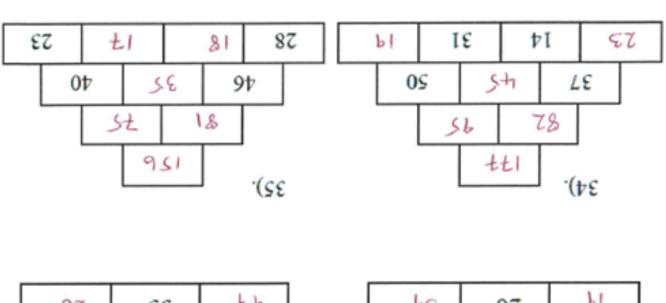
Benjamin Britten Academy of Music and Mathematics

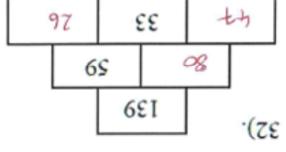


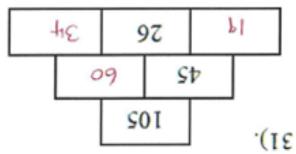
$$44.56$$
 =  $4.44$  =  $61.01$  =  $10.15$ 

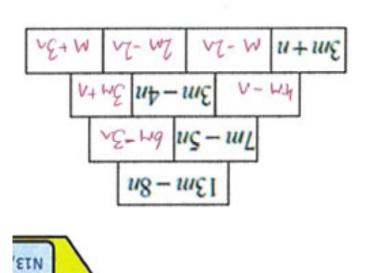
$$8200.0 = \boxed{001} \div 82.0$$
$$82.0 \times \boxed{86.8}$$

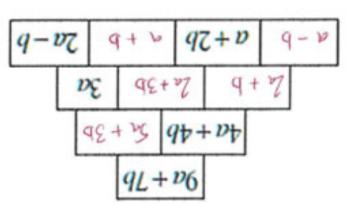
# NSI-MZI = (NE-MZ)3 @ (1+NZ)+10.2 951-45 P 36+mE @ 1-981 @ 21+m4 @ 4 3. 10x +2y +5 2+ V-W @ 1- X7+ & @ ++ M5 @ 7 0 mg 3 my 1 DIN 'EIN Write your answers below: \$ + \$1 = (1 + 1)\$ (E) $]-m21 = (n\xi - m2)$ (d) 5 Copy and complete the following. (a) 4(m+3) (b) $(b\xi+w)\xi$ (c) $(1-q)\theta$ (d) $(\xi+m)\hbar$ (a) Aultiply out the brackets. x+-4+E+19 XX+1+XE V Find an expression for the total distance from A to C. (b) 3y + 2x - y - 1 (c) 6m + 3 - 5m - 2n + n $m8 - \Gamma + m\mathcal{E}$ (s) 2 Simplify the following. m2-1+m7 d E 5m+4-3m 8 + m2 + 1 A B 2+m+4m-1 C 2+6m-3m-1 Find two matching pairs of expressions Skills practice: Collecting like terms

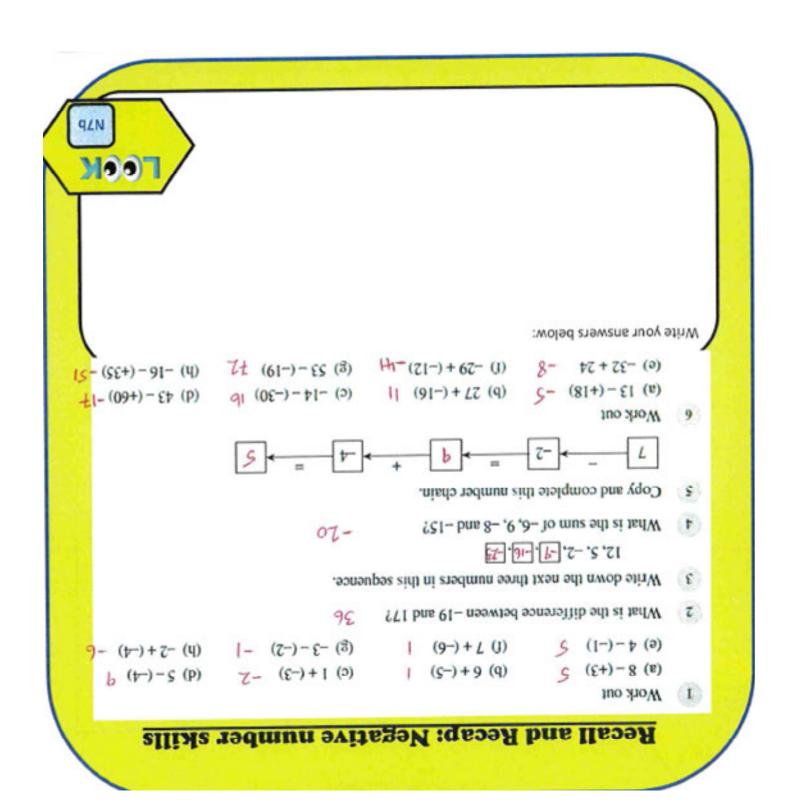












HI	17-	32	t-
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#### ANSWERS—WEEK 5



Write your answers below:

$$8 = \xi + x01$$
 17

$$\sum_{k=1}^{\infty} u_k + b = 0 \quad \text{61} \quad 9 \quad 1 - u = 0 \quad \text{71} \quad 1 + d = 0 \quad \text{72} \quad 0 \quad \text{71} = v + u \quad \text{71} \quad v = v + u \quad \text{91}$$

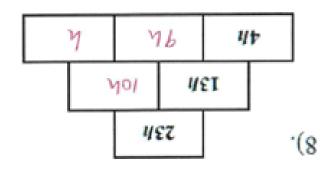
Now solve these:

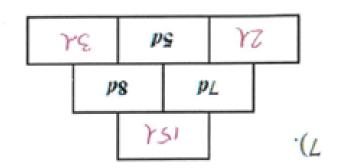
8 
$$z = \frac{x}{h}$$
 SI  $\frac{\xi}{1}$   $\frac{1}{3}$   $\frac{1}{3}$   $\frac{1}{3}$   $\frac{x}{h} = 2$  8

$$6 + 32 = 3$$
 11  $10 + 30 = 32 = 30$  11  $10m + 30 = 30$  12  $10 = 30 = 30$ 

Solve the equations.

# Skills practice: Solving equations





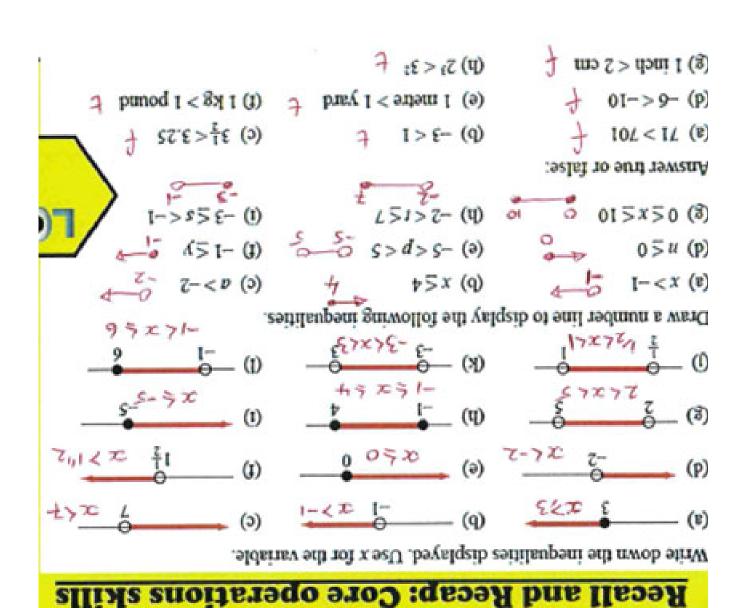
$$S = (u + t)0$$

$$8 = 3(n + 10)$$

$$8 = 3(n + 10)$$

$$9 = 3(n + 10)$$

$$9 = 3(n + 10)$$



#### Apply your core skills to the challenge question below...

# Solve the inequalities.

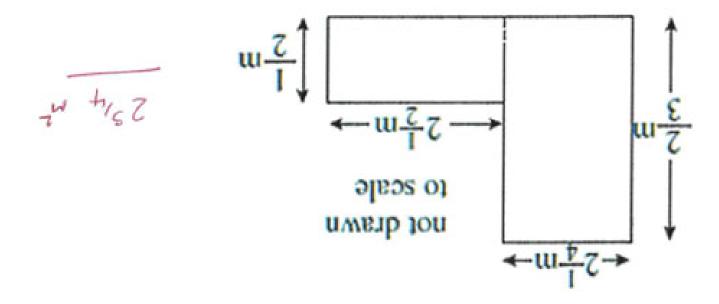
$$41-2h$$
  $L-< L+1$   $17x$   $7-> E-x$ 
 $5/17h$   $1>15$   $9120$   $8t \ge uE$ 
 $92x$   $6 \ge x + E$   $47h$   $11>16+L$ 
 $57x$   $11>9+x$   $92x$   $7 \ge 01-x$ 

Work out

(a) 
$$\frac{1}{8} \times \frac{4}{5}$$
  $\frac{1}{10}$   $\frac{4}{10}$   $\frac{1}{5}$   $\frac{1}{10}$   $\frac{2}{10}$   $\frac{4}{10}$   $\frac{2}{10}$   $\frac{2}{10}$ 

Apply your core skills to the challenge questions below...

Work out the total area of this shape.



#### ANSWERS—WEEK 10

# Recall and Recap: Substitution practice

$$L + m6 = d$$

# 19 L+M6=d 7

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$$\xi - q \psi = v$$

 $\xi = d$  nodw p briff

tr

y = 3x + 12

 $\delta = x$  nodw  $\sqrt{y}$  bni $\theta$ 

Find a when b = 30 $v + \frac{01}{q} = v$ 

 $\theta = n$  nodw m bni $\theta$ 

 $(1-n^{\frac{1}{2}})\Gamma = m$ 

Find a when b = 8

 $\theta = x$  nodw y bni $\theta$ 

y = 2(6x + 3)

84 = n nodw m bni7

 $\frac{1}{2}$   $8 - \frac{\pi}{u} = u$ 

 $\theta = w \text{ nodw } q \text{ bniH}$ 

Find p when w = 28

 $h^2 = 02 + \frac{M}{L} = d$ 

 $\frac{01}{v - q8} = v \qquad 8$ 

S = x nodw y bniF $(7+x6)\varepsilon = x$ 



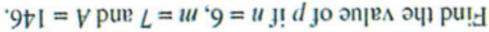
Apply your core skills to the challenge questions below...

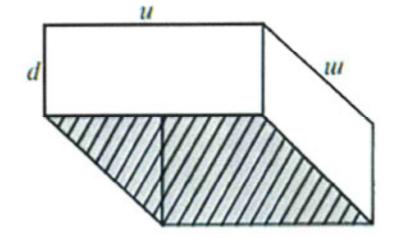
This open box has no top.

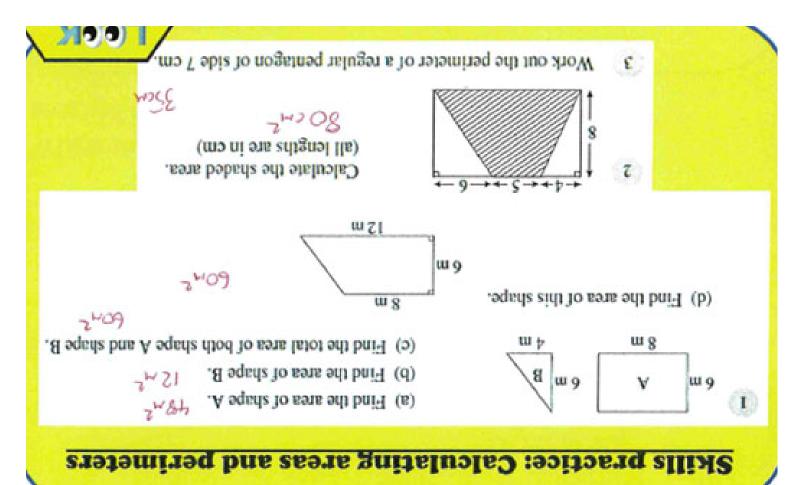
The surface area A is given by the formula

$$duz + uuu + duz = \forall$$

h= 6







If cm 12 cm + 14.5 cm + 14.5 cm + shape B

Which shape has the larger A 5 cm²
area and by how much?

Apply your core skills to the challenge questions below...

Problem solving!

# **EXTRA SUPPORT**

If you need help with completing your homework, please use the Mathswatch clips in the LOOK boxes first. If you are still stuck, speak to your class teacher.

If you need to contact the Head of Maths regarding any worries or concerns, you can contact Miss Pankhurst at:

j.pankhurst@benjaminbritten.school

#### **RESOURCES PROVIDED BY:**

Numeracy Ninjas Mr Carter Maths Miss B's Resources NRich Worksheet Works 10Ticks

