Year 10 Set 3 Summer Work 2018
<b>GCSE</b> Preparation
Name:
Due: Friday 7 <sup>th</sup> September
Answer in your homework book.

# INTEGERS, RECIPROCALS, FACTORS, MULTIPLES AND PRIME NUMBERS

Make	100				
1	66 + = 100	2	41 += 100	3	39 += 100
4	19 + = 100	5	96 += 100	6	10 + = 100
7	78 += 100	8	8 += 100	9	44 + = 100
10	54 += 100	11	13 += 100	12	7 += 100
13	83 + = 100	14	4 += 100	15	82 + = 100
<u>Times t</u>	ables				
1	2 × 9 =	2	2 × 8 =	3	6 × 3 =
4	10 × 4 =	5	3 × 5 =	6	5 × 4 =
7	2 × 5=	8	7 × 3 =	9	7 × 4 =
10	9 × 8 =	11	10 × 6 =	12	3 × 3 =
13	4 ×= 12	14	5 ×= 25	3	8 ×= 8
Divisior	<u>1</u>				
1	63 ÷ 9 =	2	24 ÷ 3 =	3	10 ÷ 5 =
4	32 ÷ 8 =	5	24 ÷ 6 =	6	21 ÷ 3 =
7	30 ÷ 6 =	8	6 ÷ 1 =	9	18 ÷ 3 =
10	5÷5=	11	9 ÷ 9 =	12	10 ÷ 2 =
13	12 ÷= 4	14	56 ÷= 8	3	64 ÷= 8
EXAM Here is From th (a) two (b) two (c) the p	a list of numbers: nis list, write down numbers which have a numbers which have a number which is the pro-	17 28 36 total of 100 difference of 50, oduct of 5 and 9.	5 45 57 68 (1 mark) (1 mark) (1 mark)	72 86	



Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Temperature	-3	-2	0	-4	-1	1
(i) (ii)	) Which day ) Which day	was the warr Answe was the cold	nest at midday r est at midday?	/? ,		(1 mark)
		Answe	r			(1 mark)

<u>Additi</u>	on and Subtraction wi	th negative numbers			
1	3 + -1 =	2	6 + -4 =	3	4 + -1 =
4	9 + -5 =	5	5 + -1 =	6	1 + -4 =
7	2 + -4 =	8	6 + -2 =	9	2 + -5 =
10	2 - 9 =	11	5 - 1 =	12	2 - 7 =
13	5 - 10 =	14	3 - 3 =	15	4 - 6 =
16	2 - 5 =	17	4 - 5 =	18	5 - 9 =
17	-6 + 5 =	20	-5 + 1 =	21	-4 + 2 =
20	-6 + 3 =	23	-5 + -5 =	24	-9 + 3 =
23	-7 + 3 =	26	-3 + 4 =	27	-8 + 2 =

<u>Multipl</u>	Multiplication and Division with negative numbers									
1	7 × -2 =	2	2 ×	-2 =	3	8 ×	-1 =			
4	4 × -2 =	5	1 ×	-3 =	6	7 ×	-4 =			
7	8 × -1 =	8	2 ×	-3 =	9	1 ×	-4 =			
10	-1 × 8 =	11	-5 ×	7 =	12	-5 ×	7 =			
13	-21 ÷ -3 =	14	<b>-8</b> ÷	-1 =	15	<b>-80</b> ÷	-10 =			
16	-10 ÷ -5 =	17	<b>-10</b> ÷	-2 =	18	-5 ÷	-5 =			
17	-30 ÷ 10 =	20	<b>-14</b> ÷	2 =	21	-36 ÷	4 =			
20	-4 ÷ 2 =	23	-63 ÷	7 =	24	<b>-</b> 27 ÷	9 =			

#### BIDMAS

Follow the correct order of operations to calculate the following:

1.	5 + 2 x 3 =	2.	10 ÷ 2 + 7 =	3.	7 + 9 ÷ 3 =
4.	2 x 3 + 7 x 2 =	5.	8 ÷ 4 - 2 × 1 =	6.	5 × 10 + 9 ÷ 1 =
7.	2 + 4 × 4 + 1 =	8.	(2 + 4) × 8 =	9.	(3 - 1) × (9 - 4) =
10.	30 - (7 + 6) =	11.	20 - (4 + 10) =	12.	(5 + 9) ÷ (2 × 1) =

#### BRACKETS

Put brackets into the questions to make them correct.

1.	2 + 2 × 3 = 12	2.	4 - 1 x 7 = 21	3.	2 + 1 × 1 + 2 = 9
4.	9 ÷ 3 × 2 + 1 = 9	5.	50 ÷ 7 + 3 = 10	6.	6 + 2 x 4 + 3 = 51

#### <u>1234</u>

Use the digits 1, 2, 3, and 4 to make correct calculations. Use brackets where appropriate.

1 =	2 =
3 =	4 =
5 =	6 =
7 =	8 =
9 =	10 =

### EXAM QUESTION

- (a) Work out 12 (3 + 7)
- (b) Put brackets in each of these calculations to make them correct.
  - (i) 18 4 2 = 16
  - (ii)  $3 + 4 \times 5 = 35$
  - (iii)  $20 \div 5 3 = 10$

PRIME NUMBERS									
Answer TRUE or FALSE:									
is a prime number	2.	9 is a prime nu	umber	3.	15 is a prime number				
is a prime number	5.	19 is a prime r	number	6.	23 is a prime number				
is a prime number	8.	8 is a prime nu	umber	9.	27 is a prime number				
3 is the smallest prime number		11.	There are four	r prime	numbers between 1 and 10				
) is a prime number		13.	There are thre	ee prime	es between 20 and 30				
	RUE or FALSE: s a prime number s a prime number is a prime number s the smallest prime number is a prime number	RUE or FALSE: s a prime number 2. s a prime number 5. is a prime number 8. s the smallest prime number is a prime number	RUE or FALSE: s a prime number 2. 9 is a prime nu s a prime number 5. 19 is a prime r is a prime number 8. 8 is a prime nu s the smallest prime number 11. is a prime number 13.	RUE or FALSE: s a prime number 2. 9 is a prime number s a prime number 5. 19 is a prime number is a prime number 8. 8 is a prime number s the smallest prime number 11. There are four is a prime number 13. There are three	EVE or FALSE: s a prime number 2. 9 is a prime number 3. s a prime number 5. 19 is a prime number 6. is a prime number 8. 8 is a prime number 9. s the smallest prime number 11. There are four prime is a prime number 13. There are three prime				

PRIME FACTORS										
Write	Write each number as a product of its' prime factors:									
1.	21	2.	12	3.	36	4.	50			
5.	150	6.	54	7.	49	8.	84			

RECIP	RECIPROCALS									
Write	Write down the reciprocal of each number									
1.	3	2.	2	3.	5	4.	$\frac{1}{4}$			
5.	$\frac{1}{2}$	6.	10	7.	$\frac{1}{8}$	8.	$\frac{1}{9}$			
9.	5	10.	$\frac{2}{3}$	11.	$\frac{3}{4}$	12.	6			

## EXAM QUESTIONS

- 1. The letters a and b represent prime numbers. Give an example to show that a + b is **not** always an even number.
- 2. Write 28 as the product of its prime factors.
- 3. Write 18 as the product of its prime factors.
- 4. Write 75 as the product of its prime factors.

FAC	<u>TORS</u> - Write	down <u>all</u> t	the factor	s of each	number:							
1.	8	2.	12	3.	. 9		4.	16	5.	20		
6.	15	7.	7	8.	. 14		9.	30	10.	36		
<u>EXA</u>	EXAM QUESTIONS											
1.	Here is a list	of numb	ers									
	6	8	11	15	25	28	30	33				
	From this lis	t, write de	own									
	(a) a multi	ple of 7.										
	(b) the two	factors of	of 24,									
	(c) a squa	re numbe	er,									
	(d) a prim	e numbe	er.									
2	Tick a boy t	o sav if a	ach of th	followin	a stator	onte ie tr	ue or fal	0				
<u> </u>	TICK & DOX (	o say ii e		e tonowin	g staten	True	Fal	se. se				
	7 and 23 are	e both od	d number	S								
	The sum of	7 and 23	is an odd	number								
	7 is a factor	of 23										
	23 minus 7 i	s a squar	e number									
		-										
3.	From the li	st of nun	nbers									
	6	8	11	21		25	29	34				
	write down											
	(i) two nu	mbers v	vith a sur	n of 31								
	(ii) two n	umbers	with a di	ifference	of 26							
	(iii) a mul	tiple of a	7									
	$(\mathbf{v})$ a fact	re numb	er									
	(.) abqui											

<u>Multip</u>	les						
Write	down the first six mult	iples of	each number:				
1.	4	2.	3	3.	7	4.	9
5.	15	6.	12	7.	8	8.	11

Highe:	st Common Factor				
Find t	he Lowest Common Factor (HCF	<sup>s</sup> ) for ea	ich pair of numbers.		
1.	36 and 10	2.	50 and 30	3.	45 and 27
4.	100 and 36	5.	88 and 56	6.	36 and 32

Lowest	Lowest Common Multiple					
Find th	ne Highest Common Multiple (LC	CM) for	each pair of numbers.			
1.	6 and 9	2.	5 and 15	3.	12 and 8	
4.	2 and 11	5.	12 and 8	6.	5 and 9	

EXAM	QUES	<u>TIONS</u>

1.	(a)	Write down two multiples of 4.	
		Answer and	(1 mark)
	(b)	Write down two multiples of 7.	
		Answer and	(1 mark)
	(c)	Write down a number which is a multiple of both 4 and 7.	
		Answer	(1 mark)
2.	Fin	d the least common multiple (LCM) of 28 and 42.	
3.	Wh	at is the least common multiple (LCM) of 12 and 18?	
4.	Fir	nd the Highest Common Factor (HCF) of 108 and 72.	

## ROUNDING AND APPROXIMATIONS

ROUN	<u>IDING</u>				
Write	e each number to the given degr	ree of a	ccuracy.		
1.	128 (nearest 10)	2.	329 (nearest 100)	3.	691 (nearest 100)
4.	135 (nearest 10)	5.	750 (nearest 100)	6.	8350 (nearest 1000)
7.	725 (nearest 100)	8.	8500 (nearest 1000)	9.	790 (nearest 1000)
10.	5692 (nearest 10)	11.	5692 (nearest 100)	12.	5692 (nearest 1000)
DECI	MAL PLACES				
1. Wr	ite each number correct to 1 de	ecimal pl	ace		
a) 7.9	2 b) 16.67		c) 2.35	d) 8.251	e) 12.85

2. Use a calculator to work out the answers and write them down correct to 1 decimal place.

a) 2.2 × 8.1	b) 5.25 x 7	c) 9.12 × 9	d) 9.5 x 7.3	e) 9.13 x 7.75
3. Write each number	correct to 2 decimal pla	aces		
a) 5.622	b) 9.456	c) 3.126	d) 3.121	e) 9.455

## EXAM QUESTIONS

1.	The	populations of thre	e towns ar	e given b	elow.			
		Arton	15748	Barton	9682	Carton	124	03
	(a)	Write the number	15 748 to 1	the neare	est thousa	nd.		
2.	The	number of spectat	tors at a f	ootball n	natch is 1	2 584.	3.	
	(a)	Write the numbe	er 12 584 i	n words.			(a)	Write seven million in figures.
	(b)	In the number 12	2 584, writ	te down	the value	of	(b)	Write seven thousand and eighty-four in figures.
		(i) the figure 8	3,				(c)	Write $8/36$ to the nearest 10.
		(ii) the figure	2.				4.	
	(c)	Write 12584 to the	he neares	st 100.			Ro	und 723 to the nearest ten.

#### ESTIMATING



Copy the lists below and match up the questions to the estimated answers. The first one has been done for you.

## EXAM QUESTIONS

1. Kim buys 71 stamps which cost 19 pence each.

By using suitable approximations, **estimate** the total cost of the stamps. You **must** show your working.

- 2. Estimate the cost of 20 meals at £2.97 each.
- <sup>3.</sup> Liam wants to calculate  $\frac{27.89 + 20.17}{3.91}$ 
  - (a) Write each of the numbers in Liam's calculation to the nearest whole number.
  - (b) Use your numbers from part (a) to estimate the answer to Liam's calculation.

4.

Find an approximate value of  $\frac{2987}{21 \times 49}$ 

You must show all your working.

### SIGNIFICANT FIGURES

	<u>111100RC0</u>					
1. Write each	number correct	t to one significa	ant figure.			
a) 27	b) 832	c) 8.12	d) 93	e) 77	f) 13.5	g) 95
2. Use a calcu	lator to work ou	it the answers c	und write them a	down correct to	o 1 significant fi	igure.
a) 50 x 23	b) 5.2	5 × 7	c) 910 x 12	d) 9.5	5 x 7.3	e) 93 x 77
3. Write each	number correc	t to two signific	ant figures.			
a) 275	b) 0.03451	c) 8.12	d) 0.956	e) 7.04	f) 7.05	g) 959

#### ESTIMATING CALCULATIONS

By approximating each number, estimate the answers to these calculations. You must show how you reached your estimate.

1.	$\frac{4.9+15.21}{1.9}$	2.	$\frac{19.89 \times 5.2}{1.05 \pm 9.03}$	3.	$\sqrt{4.05 \times 4.9 \times 5.09}$
	1.9		$1.03 \pm 9.03$		

#### EXAM QUESTIONS

1. Find an approximate value of  $\frac{41 \times 197}{78}$ 

You must show all your working.

2. Calculate the value of

$$\frac{8.4 - 3.79}{11.62 - 15.89}$$

- (a) Write down the full calculator display.
- (b) Give your answer to three significant figures.
- 3. Hannah, Gemma and Jo use their calculators to work out the value of

$$\frac{28.78}{4.31\times0.47}$$

Hannah gets 142.07, Gemma gets 14.207 and Jo gets 3.138

Use approximations to show which one of them is correct. You **must** show your working.

#### ROUNDING IN CALCULATIONS

Give your final answer to each question correct to two decimal places. Remember not to round during the intermediate steps of the calculation.

1.	$\frac{6.2+3.09}{3.2\times8.91}$	2.	$\sqrt{\frac{4.9}{1.2 \times 3.8}}$	3.	$\frac{9}{2.17} + \frac{8.14}{0.515}$
4.	$\frac{9.054 - 0.973}{6.3 \times 0.00462}$	5.	$\frac{7.56^3}{\sqrt{3.9\times9.017}}$	6.	$5 + \sqrt{3.2^2 - 2.1 \times 9.2 \times 1.1}$

#### HIGHEST AND LOWEST

1. The length of a pencil is given as 9cm to the nearest cm. What is the minimum length that the pencil could be?

2. The height of a door is 210cm to the nearest 10cm. What is the maximum height that the door could be?

3. The width of a piece of paper is given as 18.4cm correct to one decimal place.

a) What is the minimum width that the paper could be?

b) What is the maximum width that the paper could be?

EXA	M QUESTIONS
1.	(i) Calculate 9.8
	6.7 – 1.2
	Answer
	(ii) Give your answer to an appropriate degree of accuracy.
	Answer
2.	The scales at an airport weigh luggage to the nearest kilogram.
	What are the greatest and least possible weights of a case showing 25kg on the scale?
	Answer Greatest kg
	Leastkg
3.	Calculate the value of
	$\frac{8.4 - 3.79}{11.62 - 15.89}$
	(a) Write down the full calculator display.
	(b) Give your answer to three significant figures.

## WHOLE NUMBER AND DECIMAL CALCULATIONS

DECIMAL PLACE VALUE									
1. Write down the value of the underlined digits:									
a)	6.2 <u>4</u>	ь)	7. <u>1</u> 32	c)	19.45 <u>6</u>	d)	3. <u>2</u> 0	e)	7.0 <u>9</u> 1

## ORDERING DECIMALS

Put each list of numbers in order from smallest to biggest.

1	6.8	6.83	6.1	6.55	6.9	6.7	6.5	6.26
2	4.28	4.8	4.66	4.4	4.57	4.7	4.77	4.9
3	1.3	1.6	1.6	1.55	1.84	1.1	1.62	1.22
4	2.61	2.1	2.83	2.45	2.35	2.31	2.11	2.9
5	9.61	9.4	9.21	9.83	9.3	9.8	9.34	9.4
6	8.7	8.82	8.77	8.86	8.27	8.45	8.3	8.5
7	7.4	7.8	7.9	7.56	7.11	7.67	7.38	7.29
8	1.41	1.3	1.39	1.8	1.6	1.96	1.11	1.71
9	2.53	2.6	2.45	2.21	2.6	2.7	2.35	2.19
10	9.77	9.19	9.81	9.39	9.5	9.19	9.3	9.1

## EXAM QUESTIONS

1. Write down a decimal number that is between 1.5 and 1.6

2. Place the following numbers in order of size, starting with the smallest.

 $2\frac{3}{5}$  2.08 1.5<sup>2</sup> 2.237 2.64

ADDITIC	DN (WH	IOLE N	NUMBER	<u>\S)</u>								
1)	5 3	6 5	-	2)	4 2	7 9		3)	6 3	8 8	-	
4)	4 3	1 7	2 9	5)	6 2	3 6	8 3	6)	5 3	9 2	9 3	
7)	7 2	1 9	1 9	8)	8 2	3 7	8 2	9)	5 4	3 9	9 2	
<u>SUBTRAC</u>	TION	(WHC	DLE NUM	<u>ABERS)</u>								
1)	5 3	6 5	-	2)	4 2	7 6		3)	6 3	8 9	-	
4)	4 3	8 7	4 2	5)	6 2	3 2	8 3	6)	5 3	9 2	2 3	

		/	2			2	3			2	3
7)	7	7	9	8)	8	5	8	9)	5	2	1
	2	9	9		2	7	2		4	3	2

## EXAM QUESTIONS

1. Work out

2.

(a) 426 + 37 + 384

(b) 800 - 472

A youth club hires a disco for £70. Tickets for the disco cost 80p each. They sell 140 tickets.

> Friday night DISCO Tickets 80 p

How much profit does the youth club make?

ADDIT	ADDITION (DECIMALS)										
For eac	For each question, use a written method to calculate the answer.										
1	29.7 +	24.9	2	25 +	45.7	3	36.1 +	12.7			
4	20.6 +	7.7	5	35.7 +	2.5	6	18.2 +	30.9			
7	20.78 +	39.2	8	31.3 +	4.1	9	8.63 +	33.9			
10	8.96 +	33.6	11	48.5 +	38.98	12	22.8 +	19.4			
13	21.62 +	46.9	14	11.5 +	14.94	15	40.3 +	30.39			

#### SUBTRACTION (DECIMALS)

For each question, use a written method to calculate the answer.

1	66.7 - 44.4	2	75.3 - 6	3	59.7 - 18.1
4	68.8 - 30	5	60.6 - 38.6	6	68.5 - 8.3
7	75.95 - 16.9	8	61.7 - 33.3	9	73.3 - 26.8
10	61.14 - 8.6	11	69.2 - 38.36	12	89 - 18.4
13	65.07 - 23.5	14	50.9 - 32.27	15	73.1 - 8.65

## EXAM QUESTIONS

1. Work out

2.

![](_page_15_Picture_8.jpeg)

- (a) (i) Arnie orders a burger and fries. How much does this cost?
  - (ii) He pays with a £5 note. How much change does he get?

MULTIP	LICATION AND DIVIS	ION (WHOLE NUMBE	ERS)		
1	14 × 8	2	24 × 3	3	31 × 5
4	62 × 9	5	39 × 7	6	66 × 4
7	26 × 15	8	26 × 16	9	63 × 22
10	21 ÷ 7	11	50 ÷ 5	12	30 ÷ 6
13	115 ÷ 5	14	128 ÷ 8	15	126 ÷ 6
16	234 ÷ 18	17	396 ÷ 18	18	285 ÷ 19
MULTIP	LYING DECIMALS				

<u></u>					
1	1.5 × 6	2	7.5 × 4	3	2.8 × 5
4	4 × 0.6	5	4.3 × 3.7	6	7.7 × 1.5

DIVID	ING WITH DECIMALS				
1	2.7 ÷ 3	2	5.4 ÷ 6	3	3.5 ÷ 5
4	24 ÷ 0.8	5	54 ÷ 0.6	6	15 ÷ 0.5

## EXAM QUESTION

1. 132 × 8

- Cans of cola are sold in packs of six. Each pack costs £2.18 Sam buys eight packs of cola.
  - (a) How many cans does he buy altogether?
  - (b) How much does Sam pay for the eight packs?
  - (c) Sam pays for the packs with a £20 note. How much change is he given?
- A box of pencils costs £2.50 Mr Hebson orders 48 boxes for the Mathematics Department. Find the total cost.

**2.**  $0.2 \times 0.4$ 

**4.** Pens are sold in boxes of 12. Mr Hebson requires 250 pens. How many boxes does he need to order?

6.  $3.64 \times 2 + 13.7$