Ex 2.3

1 (a) $6x, 4x, x$ ← Like terms (having same Variable part)

$-2y$

(e) $5a, 6a$

$5ab, ab$

5

(f) $-1xy, -yx$

$-2y$

$3x$

3

2. (k) $6pq - 2qp \Rightarrow 6pq - 2pq \Rightarrow 4pq$

3. (e) $4xy - 2y + 2xy \Rightarrow 4xy + 2xy - 2y$

$\Rightarrow 6xy - 2y$

(p) $5x^2y + 3x^2y - 2xy \Rightarrow 8x^2y - 2xy$

4. (g) $4xyz - 3xy + 2xz - xyz$

$4xyz - xyz - 3xy + 2xz \Rightarrow 3xyz - 3xy + 2xz$

Ex 2.4

→ we multiply unlike terms.

1. (d) $2x \times 3y \Rightarrow 6xy$

(f) $4 \times 2x \times 3x^2y \Rightarrow 4 \times 2 \times 3x^3y \Rightarrow 24x^3y$

(l) $4y \times 2x \times 3y \Rightarrow 4 \times 2 \times 3x^2y \Rightarrow 24x^2y$

2. (m) $7xy + 2xz + 3yz$

$\Rightarrow 7 \times 2 \times 3\, x^2y^2z^2 \Rightarrow 42x^2y^2z^2$

Ex 2.5

$a(b+c) = ab + ac$

1 Expand : (a) $2(x+6) \Rightarrow 2x + 12$

(c) $4(2x+3) \Rightarrow 8x + 12$ (e) $4(x-2) \Rightarrow 4x - 8$

(m) $5(2x-2y) \Rightarrow 10x - 10y$ (r) $7(4x+x^2) \Rightarrow 28x + 7x^2$

2. (a) $2x(x+y) \Rightarrow 2x^2 + 2xy$ (d) $4x(3x-2y) \Rightarrow 12x^2 - 8xy$

(h) $2x^2(3-2y) \Rightarrow 6x^2 - 4x^2y$ (m) $2x^2y(y-2x) \Rightarrow 2x^2y^2 - 4x^3y$

3. $A = L \times B$

(a) $x(x+7) \Rightarrow x^2 + 7x$ (b) $2x(x^2-1) \Rightarrow 2x^3 - 2x$

(c) $4x(x-1) \Rightarrow 4x^2 - 4x$

Ex 2.6

1 (a) $2(5+x) + 3x \Rightarrow 10 + 2x + 3x \Rightarrow 10 + 5x$

(c) $2x + 2(x-4) \Rightarrow 2x + 2x - 8 \Rightarrow 4x - 8$

(i) $2x + 3 + 2(2x+3) \Rightarrow 2x + 3 + 4x + 6 \Rightarrow 6x + 9$

(l) $7y + y(x-4) - 4 \Rightarrow 7y + xy - 4y - 4 \Rightarrow xy + 3y - 4$

2. (a) $4(x+40) + 2(x-3) \Rightarrow 4x + 160 + 2x - 6$
$\Rightarrow 6x + 154$

(e) $4(x^2+2) + 2(4-x^2) \Rightarrow 4x^2 + 8 + 8 - 2x^2$
$\Rightarrow 2x^2 + 16$

(g) $3x(4y-4) + 4(3xy+4x)$
$\Rightarrow 12xy - 12x + 12xy + 16x \Rightarrow 24xy + 4x$

Ex 2.7

1) (a) 2^5 (b) 3^4 (c) 7^2 (d) 11^3 (e) 10^5 (Index form)

2)(a) $10^4 = 10\times10\times10\times10 \Rightarrow 10{,}000$ (b) $7^3 = 7\times7\times7 \Rightarrow 343$

3) (a) $64 = 2\times2\times2\times2\times2\times2 \Rightarrow 2^6$

3	243
3	81
3	27
3	9
3	3
	1

(b) $243 = 3^5$

(c) $400 = 2^4 \times 5^2$

2	400
2	200
2	100
2	50
5	25
5	5
	1

Ex 2.8

Laws of exponents :

$a^m \times a^n = a^{m+n}$

$a^m \div a^n = a^{m-n}$

$(a^m)^n = a^{m\times n}$

$a^0 = 1$

1. (b) $4^2 \times 4^9 \Rightarrow 4^{2+9} \Rightarrow 4^{11}$

(d) $x^9 \times x^4 \Rightarrow x^{9+4} \Rightarrow x^{13}$

(j) $3y^2 \times 3y^4 \Rightarrow 3\times3\times y^{2+4} \Rightarrow 9y^6$

(o) $4x^6 \times 2x \Rightarrow 8x^7$

2). (i) $\frac{12y^2}{3y} = 4y$ (n) $\frac{16x^2y^2}{4xy} = 4xy$

3) (a) $(x^2)^2 \Rightarrow x^4$ (d) $(y^3)^2 \Rightarrow y^6$

(i) $(x^2y^2)^3 \Rightarrow x^6y^6$ (n) $(xy^6)^4 \Rightarrow x^4y^{24}$

(o) $\left(\frac{x^2}{y}\right)^0 = 1$

Ex 2.8

4 (a) $12x^6$ (b) $24x^3y$ (d) $\frac{x^4}{4x^2} = \frac{x^2}{4}$

(e) $11x^3 \times 4(a^2b)^2 \Rightarrow 11x^3 \times 4a^4b^2 \Rightarrow 44a^4b^2x^3$

(f) $4x(x^2+7) \Rightarrow 4x^3 + 28x$

(i) $\frac{7x^2y^2}{(x^3y)^2} \Rightarrow \frac{7x^2y^2}{x^6y^2} \Rightarrow \frac{7}{x^4}$

(j) $\frac{4x^2 \times 3x^4}{6x^4} \Rightarrow \frac{12x^6}{6x^4} \Rightarrow 2x^2$

(o) $\frac{(4x^2y^3)^2}{(2xy)^3} \Rightarrow \frac{16x^4y^6}{4x^3y^3} \Rightarrow 4xy^3$

Ex. 2.9

$\left(\frac{a}{b}\right)^{-1} = \left(\frac{b}{a}\right)^1$

1. (a) $4^{-1} = \frac{1}{4}$ (c) $8^{-1} = \frac{1}{8}$ (d) $5^{-3} \Rightarrow \frac{1}{5^3} \Rightarrow \frac{1}{125}$

2. (a) T (b) F $\left(\frac{1}{64}\right)$ (c) F $\left(\frac{1}{x^3}\right)$ (d) F $\left(\frac{2}{x^2}\right)$

3. (a) $\frac{1}{x^2}$ (b) $\frac{1}{y^3}$ (c) $\frac{1}{x^2y^2}$ (d) $\frac{2}{x^2}$ (e) $\frac{12}{x^3}$

(g) $\frac{8x}{y^3}$ (h) $\frac{12}{x^3y^4}$

4. (a) $x^{-3+4} \Rightarrow x^1$ (b) $\frac{2}{x^3} \times \frac{3}{x^3} \Rightarrow \frac{6}{x^6}$ (c) $\frac{4x^3}{12x^2} = \frac{1}{3}x$

(d) $\frac{1}{x^7 \times x^4} \Rightarrow \frac{1}{x^{11}}$ (e) $2x^{-6} \Rightarrow \frac{2}{x^6}$ (g) $\frac{x^4}{x^3} = x$

10

1 Evaluate:

a $8^{\frac{1}{3}}$ b $32^{\frac{1}{5}}$ c $8^{\frac{4}{3}}$ d $216^{\frac{2}{3}}$ e $256^{0.75}$

2 Simplify:

a $x^{\frac{1}{3}} \times x^{\frac{2}{3}}$ b $x^{\frac{1}{2}} \times x^{\frac{3}{2}}$ c $\left(\frac{x^4}{x^{10}}\right)^{\frac{1}{2}}$ d $\left(\frac{x^6}{y^2}\right)^{\frac{1}{2}}$

e $\frac{x^{\frac{2}{3}}}{x^{\frac{1}{4}}}$ f $\frac{7}{8}x^{\frac{1}{3}} \div \frac{1}{2}x^{-\frac{1}{2}}$ g $\frac{2x^{\frac{2}{3}}}{x^{\frac{1}{3}}}$ h $\frac{9x^{\frac{1}{3}}}{12x^{\frac{1}{2}}}$

i $\frac{1}{2}x^{\frac{1}{2}} \div 2x^2$ j $-\frac{1}{2}x^{\frac{1}{4}} \div -2x^{-\frac{1}{4}}$ k $\frac{3}{4}x^{\frac{1}{2}} \div \frac{1}{2}x^{-\frac{1}{4}}$ l $-\frac{1}{4}x^{\frac{1}{2}} \div -2x^{-\frac{1}{4}}$

3 Find the value of x in each of these equations.

a $2^x = 64$ b $196^x = 14$ c $x^{\frac{1}{3}} = 7$

d $(x-1)^{\frac{1}{2}} = 64$ e $3^x = 81$ f $4^x = 256$

g $2^{-x} = \frac{1}{64}$ h $3^{x-1} = 81$ i $9^{-x} = \frac{1}{81}$

j $3^{-x} = 81$ k $64^x = 2$ l $16^x = 8$ m $4^{-x} = \frac{1}{64}$

Ex 2.10

1 (a) $(2^3)^{\frac{1}{3}} = 2$ (b) $32^{\frac{1}{5}} \Rightarrow (2^5)^{\frac{1}{5}} \Rightarrow 2$

(c) $8^{\frac{4}{3}} \Rightarrow (2^3)^{\frac{4}{3}} \Rightarrow 2^4 \Rightarrow 16$

(d) $216^{2/3} \Rightarrow (6^3)^{2/3} \Rightarrow 6^2 \Rightarrow 36$

(e) $(256)^{75/100} \Rightarrow 256^{3/4} \Rightarrow 2^{8 \times \frac{3}{4}} \Rightarrow 2^6 \Rightarrow 64$

2. (a) $x^{\frac{1}{3}+\frac{1}{3}} \Rightarrow x^{\frac{2}{3}}$ (c) $(x^{4-10})^{1/2} \Rightarrow x^{-6 \times \frac{1}{2}} \Rightarrow x^{-3} \Rightarrow \frac{1}{x^3}$

(d) $\left(\frac{x^6}{y^2}\right)^{1/2} \Rightarrow \frac{x^3}{y}$ (f) $\frac{\frac{7}{8}x^{1/2}}{\frac{1}{2}x^{-1/2}} \Rightarrow \frac{7}{8} \times \frac{2}{1} x^{1/2} \times x^{1/2}$

$\Rightarrow \frac{7}{4}x$ $\left[x^{1/2+1/2} = x\right]$

(h) $\frac{9x^{1/3}}{12x^{4/3}} \Rightarrow \frac{9}{12}x^{1/3-\frac{4}{3}} \Rightarrow \frac{3}{4}x^{\frac{1-4}{3}} \Rightarrow \frac{3}{4}x^{-1} \Rightarrow \frac{3}{4x}$

(i) $\frac{1}{2}x^{1/2} \div \frac{2}{1}x^2 \Rightarrow \frac{1}{2} \times \frac{1}{2} \frac{x^{1/2}}{x^2} \Rightarrow \frac{1}{4}x^{1/2-\frac{2}{1}} \Rightarrow \frac{1}{4}x^{\frac{1-4}{2}}$

$\Rightarrow \frac{1}{4}x^{-3/2} \Rightarrow \frac{1}{4x^{3/2}}$

(K) $\frac{3}{4}x^{1/2} \div \frac{1}{2}x^{-1/4} \Rightarrow \frac{3}{4} \times \frac{2}{1} \frac{x^{1/2}}{x^{-1/4}} \Rightarrow \frac{3}{2}x^{1/2+1/4} \Rightarrow \frac{3}{2}x^{3/4}$

3) (a) $2^x = 2^6 \Rightarrow x = 6$

(b) $14^{2x} = 14^1$

$2x = 1 \Rightarrow x = \frac{1}{2}$

(c) $x^{1/3} = 7$

on cubing both sides

$(x^{1/3})^3 = 7^3 \Rightarrow x = 343$

(d) $(x-1)^{3/4} = 64$

$(x-1)^{3/4 \times 4} = 64^4$

$(x-1)^3 = (4^3)^4$

$(x-1)^3 = (4^4)^3$

$x-1 = 4^4 \Rightarrow x-1 = 256$

$x = 257$

(e) $3^x = 81 \Rightarrow 3^x = 3^4$

$x = 4$

Ex 2.10

(f) $4^x = 256 \Rightarrow 4^x = 4^4 \Rightarrow x = 4$

(g) $2^{-x} = \frac{1}{64} \Rightarrow 2^{-x} = 2^{-6} \Rightarrow x = 6$

(h) $3^{x-1} = 81 \Rightarrow x - 1 = 4 \Rightarrow x = 5$

$\{3^{x-1} = 3^4\}$

(i) $9^{-x} = \frac{1}{9^2} \Rightarrow 9^{-x} = 9^{-2} \Rightarrow x = 2$

(j) $3^{-x} = 81 \Rightarrow 3^{-x} = 3^4 \Rightarrow x = -4$

(K) $64^x = 2 \Rightarrow 2^{6x} = 2^1 \Rightarrow 6x = 1 \Rightarrow x = \frac{1}{6}$

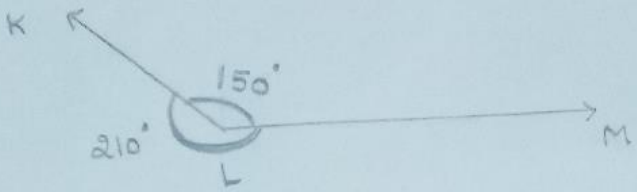
(l) $16^x = 8 \Rightarrow 2^{4x} = 2^3 \Rightarrow 4x = 3 \Rightarrow x = \frac{3}{4}$

(m) $4^{-x} = \frac{1}{64} \Rightarrow 4^{-x} = 4^{-3} \Rightarrow x = 3$

Ex 3.2

Reflex Angles

(e) $\angle KLM = 210^\circ$ $\quad 360^\circ - 210^\circ \Rightarrow 150^\circ$



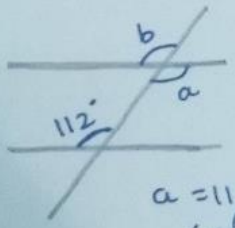
(f) $\angle JKL = 355^\circ$

$\Rightarrow 360^\circ - 5^\circ$

$\Rightarrow 355^\circ$

Ex 3.4

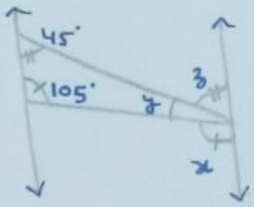
(a)



$a = 112^\circ$ (alt. $\angle$'s)

$a = b = 112^\circ$ (V.O. $\angle$'s)

(b)



$x = 105^\circ$

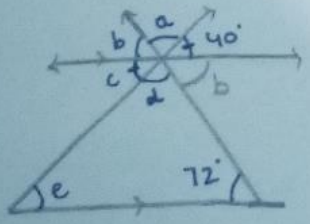
$z = 45^\circ$ (alt. int. $\angle$'s)

also $x + y + z = 180^\circ$ (St. line)

$105 + y + 45 = 180^\circ$

$y = 180^\circ - 150^\circ \Rightarrow 30^\circ$

(c)



$c = 40^\circ$ (V.O. $\angle$'s)

$b = 72^\circ$ (alt. $\angle$'s)

$a + b + 40 = 180^\circ$

$a = 180 - (72 + 40) \Rightarrow 180 - 112$

$a = d = 68^\circ$

$e = c = 40^\circ$ (alt. int. $\angle$'s)

GRADE: 9	SUBJECT: Mathematics	DATE: 26.03.2020
WORKSHEET NUMBER: 1	WORKSHEET TOPIC: INTEGERS, POWERS AND ROOTS	
INSTRUCTION (IF ANY):	https://youtu.be/K9XXk0HDmMA	

Answer the following questions:

1. List all the factors of (a) 90 (b) 160

2. Determine both the H.C.F. and L.C.M. of: (a) 42 and 70 (b) 75 and 120

3. Which is greater and by how much $8^0 \times 4^4$ or $2^4 \times 3^4$

4. Simplify :
   (a) $24 \div 8 \times (16 - 5)$ (b) $5 + 36 \div 6 - 8$ (c) $6 \times [20 \div 4) - (6 - 3) + 2]$

5. Express 65238 correct to
   (i) 4 significant figures (ii) 3 significant figures (iii) 1 significant figure

6. Find the cube root of the following:
   (i) 5832 (ii) 15625

7. Evaluate: (i) $\sqrt{(2^3 \times 3^2 \times 6)}$ (ii) $\sqrt{(41^2 - 36^2)}$

GRADE: 9	SUBJECT: Mathematics	DATE: 02.04.2020
WORKSHEET NUMBER: 2	WORKSHEET TOPIC: Reviewing Number Concepts	
INSTRUCTION (IF ANY):	https://youtu.be/2eDmJRoDogM	

Answer the following questions:

1. Find the prime factors of (a) 225 (b) 400 (c) 512

2. Find a value of p to make each of these statements true:
   (a) p x p x p = 729 (b) p x p = 441
   (c) $\sqrt{p} = 9$ (d) $\sqrt[3]{p} = 8000$

3. Calculate:
   (a) 8^3 (b) 12^3
   (c) 14^3 (d) 68^2

4. Find the length of the edge of a cube with a volume of:
   (a) 1000 cm^3 (b) 19683 cm^3
   (c) 68921 mm^3 (d) 64000 cm^3

5. Express 3568 correct to
   (i) 3 significant figures (ii) 2 significant figures (iii) 1 significant figure

GRADE: 9	SUBJECT: Mathematics	DATE: 09.04.2020
WORKSHEET NUMBER: 3	WORKSHEET TOPIC: Exponents	
INSTRUCTION (IF ANY):	https://youtu.be/_IJSDEfqKYE	

Laws of Exponents:

1. $a^m \times a^n = a^{m+n}$ For example: $5^5 \times 5^3 = 5^{5+3} = 5^8$
2. $a^m \div a^n = a^{m-n}$ For example: $5^5 \div 5^3 = 5^{5-3} = 5^2$
3. $(a^m)^n = a^{m \times n}$ For example: $(5^3)^2 = 5^{3 \times 2} = 5^6$
4. $a^m \times b^m = (a \times b)^m$ For example: $2^4 \times 3^4 = (2 \times 3)^4 = 6^4$
5. $a^0 = 1$ For example: $8^0 = 1$
6. $a^{-m} = 1 / a^m$ For example: $5^{-3} = 1 / 5^3$

WORKSHEET – 3 (Exponents)

1. Simplify each expression. Write the answer in index (power notation) form:
   (i) $11^3 \times 11^6$ (ii) $12^{14} \div 12^6$
   (iii) $5^3 \div 5^4$ (iv) $8^5 \times 8^2 \times 8^3$

2. Simplify each expression:
   (i) $4^3 \times 3^3$ (ii) $(3^4)^2$
   (iii) $6^{12} \div 6^8$ (iv) $5^3 \times 5^2$

3. Write each number as a power of 3:
   (i) 81 (ii) 729
   (iii) 1/27 (iv) 1/ 243

4. Write the following numbers in ascending order:

1^{12}	2^6	3^4	4^3	6^2	12^1

5. Write each expression as a single number:

   (i) $4^{-1} + 8^{-1}$ (ii) $3^2 + 3^1 + 3^0 + 3^{-1} + 3^{-2}$

GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 16.04.2020
WORKSHEET NUMBER: 4	WORKSHEET TOPIC: Reviewing number concepts (Chapter – 1)	
INSTRUCTION (IF ANY):	CALCULATOR ALLOWED.	

Note: ● Apply BODMAS rule:

B	**B**rackets first
O	**O**rders (i.e. Powers and Square Roots, etc.)
DM	**D**ivision and **M**ultiplication (left-to-right)
AS	**A**ddition and **S**ubtraction (left-to-right)

Divide and Multiply rank equally (and go left to right).

Add and Subtract rank equally (and go left to right).

● When you have more than one set of brackets in a calculation. You work out the innermost set first.

WORKSHEET – 4 (Reviewing number concepts)

1. Insert brackets into the following calculations to make them true:

   (i) 3 x 4 + 6 = 30

   (ii) 36 ÷ 3 x 3 – 3 = 6

   (iii) 1 + 4 x 20 ÷ 5 = 20

   (iv) 3 + 8 x 15 – 9 = 66

   (v) 9 – 4 x 7 + 2 = 45

2. Simplify:

   (i) (8 + 3) x (30 ÷ 3) ÷ 11

   (ii) {2 – [4(2 – 7) – 4(3 + 8)] – 2 x 8}

   (iii) 15 + 30 ÷ 3 + 6

   (iv) 6 x [(20 ÷ 4) – (6 – 3) + 2]

   (v) 200 – [(4 +12) – (6 + 2)]

3. Each * represents a missing operation **(i.e. +**; –; **x or ÷)**. Work out what it is.

   (i) 12 * (28 * 24) = 3

   (ii) 84 * 10 * 8 = 4

   (iii) 23 * 11 * 22 * 11 = 11

   (iv) 40 * 5 * (7 * 5) = 4

(v) 9 * 15 * (3 * 2) = 12

4. Round each number to 2 decimal places:

(i)	38.3456	(ii)	8.299
(iii)	0.005	(iv)	7.34876

GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 23.04.2020
WORKSHEET NUMBER: 5	WORKSHEET TOPIC: Making sense of Algebra (Chapter – 2)	
INSTRUCTION (IF ANY):	https://youtu.be/MBmKw4VCqKw	

Algebraic Expression:

An algebraic expression in mathematics is an expression which is made up of variables and constants along with algebraic operations (addition, subtraction, etc.) Expressions are made up of terms.

For example: 5m – 3, is an algebraic expression, in which 5m and 3 are two terms.

- m is a **Variable**, whose value is unknown to us which can take any value.
- 5 is known as the **Coefficient** of m, as it is a constant value used with the variable term and is well defined.
- 3 is the **Constant** value term which has a definite value.

How to derive algebraic expressions?

An algebraic expression is a combination of constant, variables and algebraic operations (+, -, ×, ÷). We can derive the algebraic expression for a given situation or condition by using these combinations.

For example, suppose the average height (in cm) of students in your class be h,

A student who is 10 cm taller than the average would have a height of (h + 10) cm,

so this is an algebraic expression.

Applying the Rules:

Algebraic expression should be written in the shortest, simplest possible way:

● 2 x h is written as 2h (no need to put multiplication sign between them).

● h means 1 x h, but you do not write the 1.

● h ÷ 2 is written as h/2.

● When you have the product of a number and a variable, the number is written first so we write 2h and not h2. Also, variables are normally written in alphabetical order so pqr and 2ab rather than rqp and 2ba.

WORKSHEET – 5 (Algebra)

1. Rewrite each expression in simplest form:

   (i) 6 x a x b (ii) 6 x m x m x m

   (iii) 2 x a x a ÷ 5 (iv) 9 x (a +4) ÷ (2 x a)

2. Let the unknown number be **'m'**. Write expression for:

   (i) The difference between 25 and the unknown number.

   (ii) The unknown number squared.

   (iii) Three times the unknown number plus seven.

   (iv) The sum of the unknown number and fifteen.

3. A CD and a DVD cost **'d'** dollars:

   (i) If the CD cost $ 10, what does the DVD cost?

   (ii) If the DVD cost three times the CD, what does the CD cost?

   (iii) If the CD cost $(d -15), what does the DVD cost?

4. A woman is **'y'** years old:

   (i) How old was she ten years ago?
   (ii) How old will she be in 15 years' time?
   (iii) Her son is half her age. How old is the son?

5. Evaluate the following expression for y = 3

   (i) $6\ y^2$ (ii) 7y - 4

   (iii) $(y^3 + y^2) \div 4$ (iv) 6(y +4) ÷ (2y)

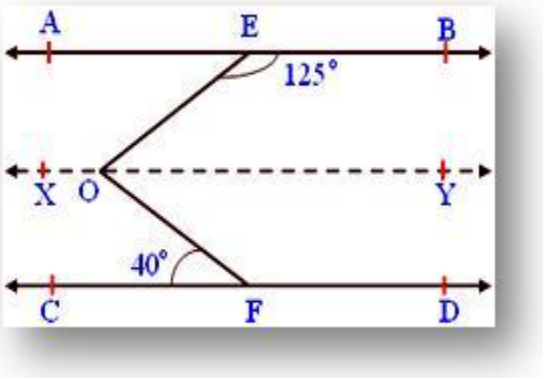
GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 22.06.2020
WORKSHEET NUMBER: 6	WORKSHEET TOPIC: Lines, Angles and Shapes (Chapter – 3)	
INSTRUCTION (IF ANY):	Use a ruler and a protractor. Draw diagrams (angles) with pencil.	

WORKSHEET – 6 (Lines and Angles)

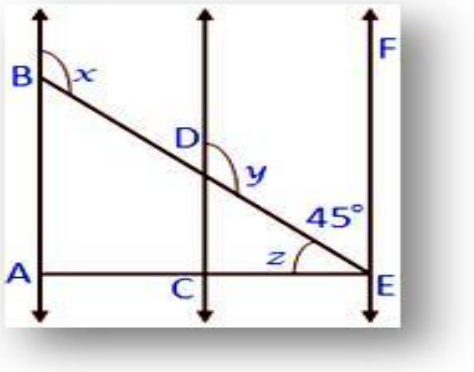
1. Use a ruler and a protractor to accurately draw the following angles:
   (i) Angle ABC = 125^0
   (ii) Angle PQR = 75^0
   (iii) Angle KLM = 150^0
   (iv) Angle EFG = 225^0
   (v) Angle XYZ = 320^0
2. Two angles are complementary. The first angle is twice the size of the second. What are their sizes?
3. One of the angles formed when two lines intersect is 84^0.What are the sizes of the other three angles?

GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 22.06.2020
WORKSHEET NUMBER: 7	WORKSHEET TOPIC: Lines, Angles and Shapes (Chapter – 3)	
INSTRUCTION (IF ANY):	Use a ruler and a protractor. Draw diagrams (angles) with pencil.	

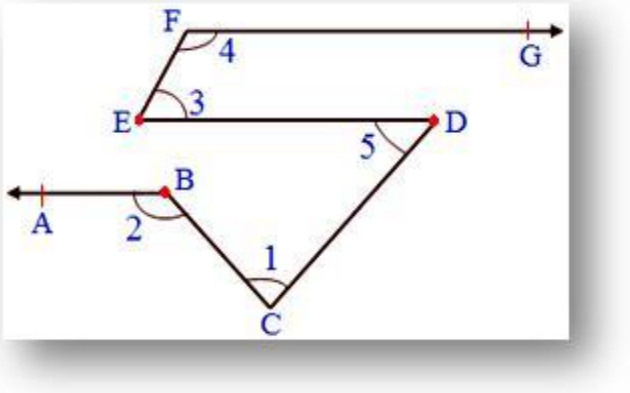
1. In the given figure AB ∥ CD, ∠BEO = 125°, ∠CFO = 40°. Find the measure of ∠EOF.



2. In the given figure AB ∥ CD ∥ EF and AE ⊥ AB. Also, ∠BAE = 90°. Find the values of ∠x, ∠y and ∠z.



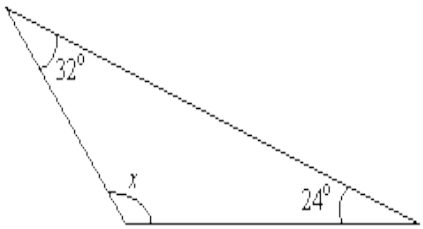
3. In the given figure, AB ∥ ED, ED ∥ FG, EF ∥ CD. Also, ∠1 = 60°, ∠3 = 55°, then find ∠2, ∠4, ∠5.



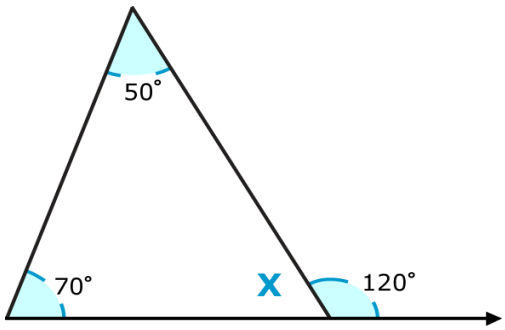
GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 29.06.2020
WORKSHEET NUMBER: 8	WORKSHEET TOPIC: Lines, Angles and Shapes (Chapter – 3)	
INSTRUCTION (IF ANY):	Use a ruler and a protractor. Draw diagrams (angles) with pencil.	

WORKSHEET – 8 (Angle sum property of triangle)

1) Two angles of a triangle are of measures 75^0 and 35^0. Find the measures of the third angle.
2) Of the three angles of a triangle, one is twice the smallest and another is three times the smallest. Find the angles.
3) If the angles of a triangle are in the ratio 2:3:4, determine the three angles.
4) Find the value of *x* in the following triangle.



5) Find the value of *x* in the following triangle.



GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 29.06.2020
WORKSHEET NUMBER: 9	WORKSHEET TOPIC: Angle sum property of Quadrilateral (Ch – 3)	
INSTRUCTION (IF ANY):	Use a ruler and a protractor. Draw diagrams (angles) with pencil.	

WORKSHEET – 9 (Angle sum property of Quadrilateral)

1) The three angles of quadrilateral are 60˚, 70˚, 90˚. Find the fourth angle?
2) If three angles of quadrilateral are equal and the measure of the fourth angle is 30˚, find the measure of each of the equal angle?
3) If the four angles of quadrilateral are in the ratio of 9 : 8 : 4 : 15, find the measures of each angle?
4) If the measure of two angles of a quadrilateral are 55˚ and 75˚ and the other two angles are equal, find the measure of each of the equal angles?

GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 06.07.2020
WORKSHEET NUMBER: 10	WORKSHEET TOPIC: Polygons (Ch – 3)	
INSTRUCTION (IF ANY):	CALCULATOR ALLOWED.	

WORKSHEET – 10 (Polygons)

1. Calculate the sum of the interior angles of a regular polygon with:

(a) 8 sides (b) 15 sides

2. Find the number of sides of a polygon whose each interior angle is:

(a) 165° (b) 135°

3. Find each interior angle in a regular polygon of

(a) 10 sides (b) 16 sides

4. Find the number of sides of a polygon, the sum of whose interior angle is:

(a) 1800° (b) 1260°

GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 10.07.2020
WORKSHEET NUMBER: 11	WORKSHEET TOPIC: Fractions and Standard form (Ch – 5)	
INSTRUCTION (IF ANY):	https://youtu.be/0b-J9gT22tA	

WORKSHEET – 11 (Fractions and Standard form)

1. Find four equivalent fractions of the following:

(a) 3/5 (b) 5/7 (c) 4/9

2. Express each of the following fractions in its simplest form:

(a) 15/35 (b) 13/65 (c) 240/360

3. Evaluate:

(i) 7/11 by 3/7

(ii) 3/5 by 25

(iii) $3\frac{4}{15}$ by 45

(iv) $3\frac{1}{8}$ by 48

4. Each side of a square is $6\frac{2}{3}$ m long. Find its area.

GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 13.07.2020
WORKSHEET NUMBER: 12	WORKSHEET TOPIC: Fractions and Standard form (Ch – 5)	
INSTRUCTION (IF ANY):	https://youtu.be/0b-J9gT22tA	

WORKSHEET – 12 (Fractions and Standard form)

1. Simplify:

(a) 0.3/15 (b) 0.5/30 (c) 0.4/2.4

2. Evaluate:

(a) 2/5 of 45 (b) 3/7 of 42 (c) 2/3 of 81

3. Divide:

(i) 17/11 by 17/33

(ii) 3/5 by 21/45

(iii) 2/9 by 16/27

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GRADE: 9	SUBJECT: MATHEMATICS	DATE: 17.07.2020

REVISION TEST **M.M. - 10**

Q.1 Two angles are complementary. The first angle is twice the size of the second. What are their sizes? (2)

Q.2 Find each interior angle in a regular polygon of 10 sides

(2)

Q.3 Simplify each expression. Write the answer in index (power notation) form:

(i) $12^{18} \div 12^{7}$ (ii) $(7^{2})^{3}$ (2)

Q4 Simplify: $(5x + 7)(2x + 3) - (3x + 2)(2x - 5)$ (2)

Q5 If the measure of two angles of a quadrilateral are 55˚ and 75˚ and the other two angles are equal, find the measure of each of the equal angles?

(2)

GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 10.08.2020
WORKSHEET NUMBER: 14	WORKSHEET TOPIC: Fractions and Standard form (Ch – 5)	
INSTRUCTION (IF ANY):	https://youtu.be/0b-J9gT22tA	

WORKSHEET – 14 (Fractions and Standard form)

1. Write each of the following in standard form:

   (a) 14 30000000 (b) 850000 (c) 0.0000065 (d) 0.00312

2. Write each of the following as ordinary number

   (a) 3.6×10^{4} (b) 4.27×10^{7} (c) 4.65×10^{-5} (d) 1.23×10^{-7}

3. Find the number of seconds in a day. Write your answer in standard form?

GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 13.08.2020
WORKSHEET NUMBER: 15	WORKSHEET TOPIC: Equations and rearranging formulae (Ch – 6)	
INSTRUCTION (IF ANY):		

WORKSHEET – 15 (Equations and rearranging formulae)

1. Expand and simplify your answers as far as possible:

   (a) $-5(2a + 3b)$ (b) $-10(2t - 7)$

   (c) $2.5(4p + 2q)$ (d) $7(3a - 5b + 4c)$

   (e) $-8(6m - 7n)$ (f) $7.5(6p + 8q)$

   (g) $10a + 5(2a + 5)$ (h) $2m(3m - 5) + 3m(7 - 5m)$

GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 17.08.2020
WORKSHEET NUMBER: 16	WORKSHEET TOPIC: Equations and rearranging formulae (Ch – 6)	
INSTRUCTION (IF ANY):		

WORKSHEET – 16 (Equations and rearranging formulae)

1. Solve the following equations:

   (a) $2a + 3 = 13$ (b) $2t – 7 = 5$

   (c) $4p + 2 = 12p – 14$ (d) $7 – 3a = 5a + 4$

   (e) $13m – 21 = 6m – 7$ (f) $11p – 7 = 6p + 18$

   (g) $10a + 5 = 5(3a + 5)$ (h) $2(3m – 5) = 4(8 – 5m)$

GRADE: 9 (IGCSE Year – 1)	SUBJECT: MATHEMATICS	DATE: 20.08.2020
WORKSHEET NUMBER: 17	WORKSHEET TOPIC: Equations and rearranging formulae (Ch – 6)	
INSTRUCTION (IF ANY):		

WORKSHEET – 17 (Rearrangement of a formula)

1. Make the variable shown in brackets the subject of the formula in each case:

   (i) $a - b = c$ (b) (ii) $t + u = s$ (u)

   (iii) $p\,q = r$ (p) (iv) $a(n - m) = t$ (m)

   (v) $(m - n) / r = s$ (m) (f) $(x - y) / z = t$ (x)

   (g) $v = u + at$ (t)