EXAMINATIONS COUNCIL OF LESOTHO
Lesotho General Certificate of Secondary Education

CANDIDATE NAME													
CENTRE NUMBER						CANDIDATE NUMBER							

MATHEMATICS **0178/01**

Paper 1 (Core) **October/November 2020**

1 hour

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments
Tracing paper (optional)

READ THESE INSTRUCTIONS FIRST

Write your name, Centre number and candidate number on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.

DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.

ELECTRONIC CALCULATORS **MUST NOT** BE USED IN THIS PAPER.

The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 60.

1 **(a)** Write 520 as a product of its prime factors.

..... [1]

(b) It is given that $1260 = 2^2 \times 3^2 \times 5 \times 7$.

Find the highest common factor of 1260 and 520.

..... [2]

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2 Consider the numbers

$$-\frac{\pi}{11}, \quad 8.215, \quad \frac{23}{37}, \quad \sqrt{9}, \quad \sqrt[3]{64}.$$

Write the number which is

(a) irrational,

..... [1]

(b) prime,

..... [1]

(c) a perfect square.

..... [1]

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3 Consider the sequence

7, 12, 17, 22, 27, ...

(a) Write the next 2 terms of the sequence.

..... [1]

(b) Write the n^{th} term of the sequence.

..... [1]

(c) Given that the k^{th} term is 212, find the value of k.

..... [2]

4 **(a)** Find the fraction that is exactly half way between $\frac{4}{7}$ and $\frac{5}{7}$, in its simplest form.

..... [2]

(b) $x : y = 3 : 7$ and $y : z = 2 : 3$.

Find the ratio $x : y : z$.

..... [2]

(c) Evaluate $(3 \times 10^{11})^2$.

..... [2]

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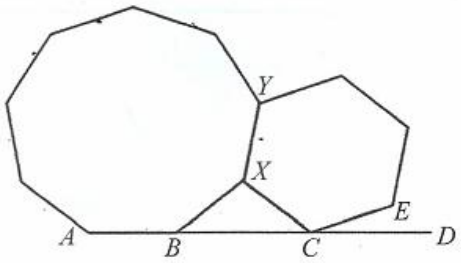
5 The diagram shows two regular polygons joined at side XY.

AD is a straight line.



NOT TO SCALE

Calculate

(a) the size of angle XBC,

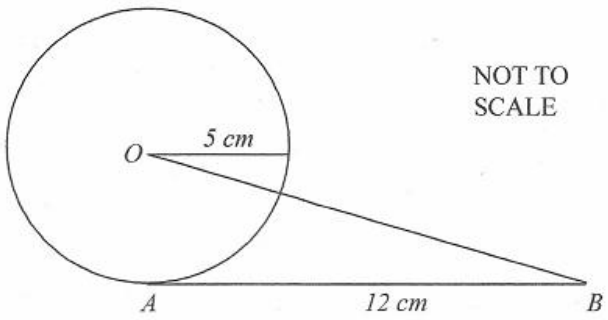
..... [2]

(b) the size of angle ECD.

..... [3]

6 The diagram shows a circle centre O and radius 5 cm.

AB is a tangent and $AB = 12$ cm.



Find OB.

..... cm [3]

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7 Factorise fully.

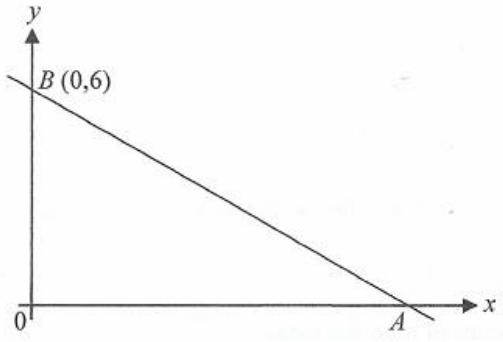
(a) $3x^2y - 6xy$

..... [2]

(b) $x^2 - 2x - 8$

..... [2]

8 The diagram shows a straight line AB of gradient $\frac{-3}{4}$.



(a) Find

(i) the coordinates of A,

( ) [2]

(ii) the distance AB,

..... [2]

(iii) the equation of a line parallel to line AB passing through (0,2).

..... [2]

(b) C is the image of A under reflection in $x = 1$.

Find the coordinates of the point C.

( ) [2]

9 **(a)** The table shows the number of students who attended given number of games.

Number of games	0	1	2	3
Number of students	4	5	2	t

Find

(i) the greatest value of t for which the median is 1,

..... [1]

(ii) an expression, in terms of t, for the mean.

..... [2]

(b) Consider the multiplication table given.

×	**1**	**2**	**3**
4	4	8	.....
5	5	.....	15
6	.....	12	18

(i) Complete the table. [1]

(ii) A product is randomly chosen from the table.

Find the probability that the product is

(a) an odd number,

..... [1]

(b) either a prime number or a multiple of 4.

..... [2]

(iii) A product row is chosen at random from the table and deleted.

Find the probability that the product, randomly chosen from the remaining table, is a multiple of 4.

..... [2]

10 A shopkeeper bought a cell-phone for M1500.

She later sold it making 30% profit.

Calculate the selling price.

..... [3]

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11 Express as a single fraction in its lowest terms

$$\frac{2x-3}{5}+\frac{x+1}{3}$$

..... [3]

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12 Solve

(a) $3x+3=24,$

$x =$ ..... [2]

(b) $2p+3q=21$

$3p-2q=-1,$

$p =$ ..... $q =$ ..... [3]

(c) $(2t-5)(t+3)=0.$

$t =$ ..... or ..... [2]

13 $f: x \to \frac{x-5}{2}$

Find the value of

(i) k if $f: -3 \to k$,

..... [1]

(ii) h if $f: h \to 7$.

..... [1]