DEPARTMENT OF EDUCATION

CERTIFICATE OF BASIC EDUCATION EXAMINATIONS

MATHEMATICS

Tuesday

03 November 2015

Time allowed:

3 hours

(8:30am – 11:30 am)

NO EXTRA TIME

(NO OTHER TIME)

Candidates are advised to fully utilise the allocated time

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INSTRUCTIONS TO CANDIDATES

To be read by the external invigilator to all candidates before the start of the examination)

There are **46** questions in this paper worth **50 marks**. Attempt ALL questions, even if you are not sure of some of the answers.

The examination is divided into three parts:

PART A:	**Multiple – Choice Test (Question 1 to 25)**	**25 marks**
PART B:	**Short – Answer Test (Question 26 to 45)**	**20 marks**
PART C:	**Extended Response (Question 46)**	**5 marks**

The Answer Sheet is part of the Examination Booklet. Take out the middle pages and remove the Answer Sheet by tearing along the perforation. You may use the blank sheet for rough work.

Write your province code, school code and candidate number, your name and school name in the space provided on the **Answer Sheet**.

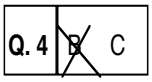
For each question in **PART A,** choose the best answer and write its LETTER in the space provided on the **Answer Sheet**.

For each question in **PART B** and **PART C** work out the answer and write the answer in the space provided on the **Answer Sheet**.

If you find a question very difficult, do not spend too much time thinking about it. Leave the question and go on with the rest of the paper. If you have time at the end, return to the difficult questions and think about them more carefully.

Write your answers in **BLUE** or **BLACK** ink (pen or biro).

If you decide to change an answer, make your correction as shown below so that it is clear to the markers what your final answer is. Do NOT use correction fluid on your answer sheet.



Do NOT use calculators to work out your answers.

Hand in BOTH the Answer Sheet and the papers used for rough work at the end of the test.

THE PENALTY FOR CHEATING OR ASSISTING OTHERS TO CHEAT IN NATIONAL EXAMINATIONS IS NON-CERTIFICATION.

DO NOT TURN OVER THE PAGE AND DO NOT WRITE UNTIL YOU ARE TOLD TO START.

PART A (Questions 1 to 25)

For each question, choose the best answer and write the letter A, B, C or D in the space next to the question number on the ANSWER SHEET.

QUESTION 1

What percent of K1.00 is 5 toea?

A. 5 B. 15

C. 25 D. 50

QUESTION 2

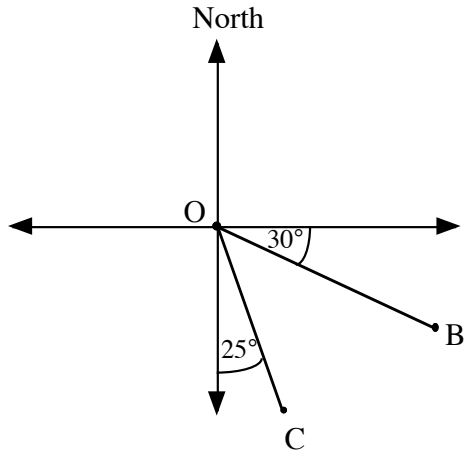
Which of these expressions contain **like terms**?

A. $2x + 3y$ B. $3b + 3b^2$

C. $xy + 2xy$ D. $m^2n + n$

QUESTION 3

Study the diagram below and answer the question that follows



What is the direction of point C from O?

A. $S\ 25°\ E$ B. $S\ 25°\ W$

C. $N\ 25°\ E$ D. $N\ 25°\ W$

QUESTION 4

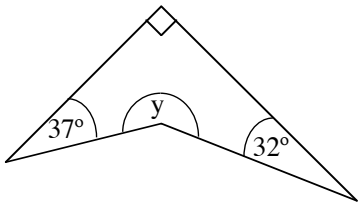
What is the value of $\frac{3}{4} - \frac{5}{7}$?

A. $\frac{2}{3}$ B. $\frac{1}{28}$

C. $\frac{11}{4}$ D. $\frac{5}{6}$

QUESTION 5

What is the size of angle y?



A. 201° B. 207°

C. 208° D. 291°

QUESTION 6

Conversion of ratios to fractions, decimals and percentages

Ratio	Fraction	Decimal	Percentage
1 : 2	$\frac{1}{2}$	0.5	50%

Follow the example in the table above and answer the question.

The ratio $3:5$ expressed as percentage is

A. 50% B. 60%

C. 70% D. 80%

QUESTION 7

The product of the expression below is 100. The missing number in the square bracket is raised to the power 2.

$$2 \times 2 \times [\_\_]^2$$

What is the missing number?

A. 4 B. 5

C. 6 D. 7

QUESTION 8

The value of $\frac{3}{5} \div \frac{7}{8}$ is

A. $\frac{11}{24}$ B. $\frac{19}{30}$

C. $\frac{24}{35}$ D. $\frac{21}{40}$

QUESTION 9

Peter bought 5 metres of white fabric and cut it into two pieces in the ratio $3:7$.

What is the length of the longer piece in metres?

A. 1.4 B. 1.5

C. 3.5 D. 4.0

QUESTION 10

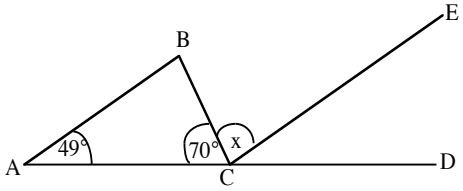
A temperature reading indicated on a thermometer on a particular day was $-12°C$. After some hours, the temperature increased by $^{+}5°C$.

What is the new temperature reading after the increase?

A. $^{-}17°C$ B. $^{-}7°C$

C. $^{+}7°C$ D. $^{+}17°C$

QUESTION 11



AB is parallel to CE.

The size of angle x is

A. $21°$ B. $49°$

C. $61°$ D. $119°$

QUESTION 12

The volume of the cylinder is $400\ cm^3$ and its height is 20 cm.

What is the area of the end face in square centimetres?

A. 10 B. 20

C. 100 D. 8000

QUESTION 13

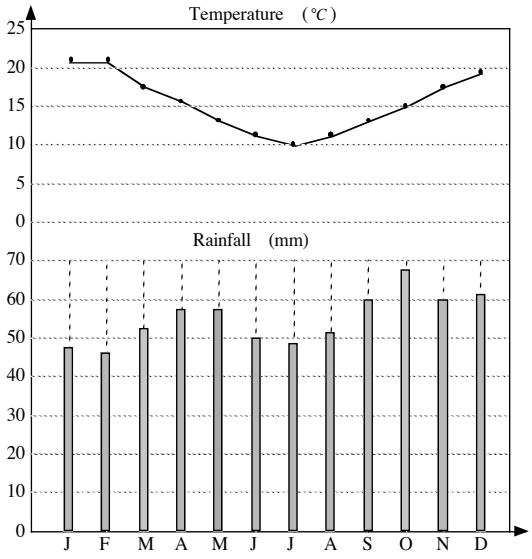
What is the sum of 2 metres and 6 centimetres expressed in centimetres?

A. 2.06 B. 20.6

C. 206 D. 2,060

For questions 14 and 15 refer to the information below

Month	J	F	M	A	M	J	J	A	S	O	N	D
Temp °C	21	21	19	16	14	11	10	11	13	15	17	19
Rainfall mm	48	47	52	57	57	50	49	51	60	68	60	61



QUESTION 14

What is the temperature of the month with the highest rainfall in °C?

A. 16 B. 15

C. 14 D. 13

QUESTION 15

What is the approximate average temperature of the last quarter of the year in °C?

A. 15 B. 16

C. 17 D. 18

The table below shows a short dictation test result from a Grade 7 class. Use the table to answer questions 16 and 17.

Score	Tally	Frequency
0		1
1	IIII	4
2	𝍸 II	7
3	𝍸	5
4	III	3

QUESTION 16

What is the mode score?

A. 7 B. 5

C. 3 D. 2

QUESTION 17

What percentage of the students scored below 2?

A. 50 B. 40

C. 25 D. 5

QUESTION 18

Study the 4 x 4 array of numbers from the calendar and answer the question below.

TUE	WED	THUR	FRI
6	7	8	9
13	14	15	16
20	21	22	23
27	28	29	30

The pattern going diagonally down, starting from top far left, to bottom far right is

A. +9 B. +8

C. +7 D. +6

QUESTION 19

What is the new selling price?

A. K15 B. K20

C. K55 D. K60

QUESTION 20

A car uses 5 litres of petrol to travel 20 kilometres.

How much petrol in litres would it require to travel 10 kilometres?

A. 2 B. 2.5

C. 2.75 D. 3

QUESTION 21

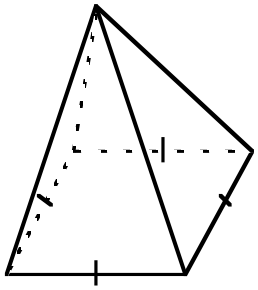
There are 12 oranges to be shared equally among a group of children. Each child received $\frac{1}{2}$ of an orange. How many children were given oranges?

A. 20 B. 24

C. 25 D. 28

QUESTION 22

Calculate the volume, ($V = \frac{1}{3}Ah$) in cubic metres of a square based pyramid with sides 5 metres and height 9 metres.



A. 45 B. 75

C. 135 D. 225

QUESTION 23

The simplified form of $3(3a+7)-6a+1$ is

A. $15a+20$ B. $15a-20$

C. $3a+22$ D. $3a-22$

QUESTION 24

Jane earns K500 per week and got a 10% pay rise.

How much will she be earning after the pay rise?

A. K500.00 B. K550.00

C. K600.00 D. K1,000.00

QUESTION 25

In a class of 40 students, 20% are females.

How many males are in the class?

A. 8 B. 16

C. 32 D. 40

PART B (Questions 26 to 45)

For each question in this part work out the correct answer and write it in the space provided on the ANSWER SHEET.

QUESTION 26

Calculate: $\frac{2}{5}+\frac{3}{10}$

QUESTION 27

Calculate: $42 \div -6$

QUESTION 28

Using the formula $s=(n-2)\times 180$, calculate the total interior angle sum of a pentagon, where **n** is the number of sides of a polygon and **s** is the total interior angle sum.

QUESTION 29

What is the value of ***n*** in the number pattern;
$1,\ 4,\ 7,\ 10,\ n,\ 16,\ \ldots$

QUESTION 30

Simplify: $\frac{2p^3q^4}{p^3q^3}$

QUESTION 31

A football club bought 20 jumpers at K22.95 each.

Calculate the total cost in Kina for the jumpers.

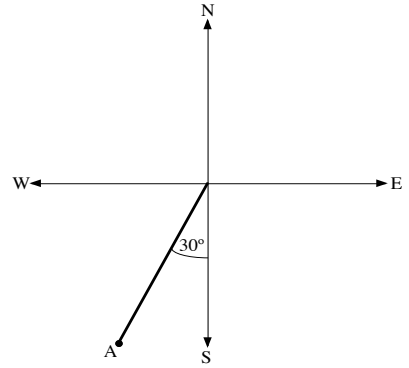
QUESTION 32

K60.00 is to be shared between Anne, Dominic and Tio in the ratio $2:3:5$.

How much in total will Anne and Tio receive?

QUESTION 33

Calculate the true bearing of point A.



QUESTION 34

If $x=2$ and $y=5$ then $2x^2-y$ is?

For Questions 35 to 36, refer to the information below

The pictograph shows favourite sports of 8 Orange class in Rossel Primary School.

Sports	
Volleyball	
Soccer	
Rugby	
Basketball	

QUESTION 35

How many students are there in 8 Orange class?

QUESTION 36

Which sport is favoured by the most number of students?

For questions 37 and 38, refer to the information below

The flight schedule shows the departure and arrival times for Forker 100 Monday to Wednesday

MONDAY					TUESDAY					WEDNESDAY				
FLT	DEP	FROM	TO	ARR	FLT	DEP	FROM	TO	ARR	FLT	DEP	FROM	TO	ARR
PX100	0600	POM	LAE	0645	PX244	0645	POM	MAG	0745					
PX101	0715	LAE	POM	0800		0815	MAG	HKN	0915	PX240	0715	POM	HGN	0820
PX180	0845	POM	HGU	0945	PX243	0945	HKN	LAE	1035	PX241	0850	HKN	POM	0955
PX181	1015	HGU	POM	1115		1105	LAE	POM	1150	PX142	1040	POM	MAG	1140
PX102	1200	POM	LAE	1245							1210	MAG	VAI	1315
PX103	1315	LAE	POM	1400						PX141	1345	VAI	POM	1515
PX182	1510	POM	HGU	1610	PX158	1600	POM	GUR	1650	PX108	1600	POM	LAE	1645
PX183	1640	HGU	POM	1740	PX159	1720	GUR	POM	1810	PX109	1715	LAE	POM	1800

QUESTION 37

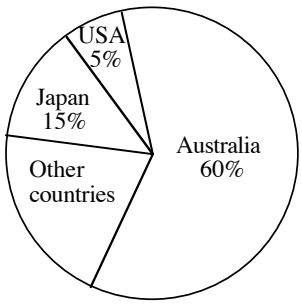
How long in minutes is the flight, PX 243, from HKN to LAE on Tuesday?

QUESTION 38

Flight PX 142 departs POM at 1040 Hrs. When does the flight arrive in VAI? Give your answer in 12 Hour timing.

Refer to the pie chart below to answer Questions 39 and 40

The pie chart below shows visitors to Papua New Guinea in a year.



QUESTION 39

What percentage of visitors came from other countries?

QUESTION 40

If there were 10 000 visitors to Papua New Guinea in a particular year, how many were Australians?

QUESTION 41

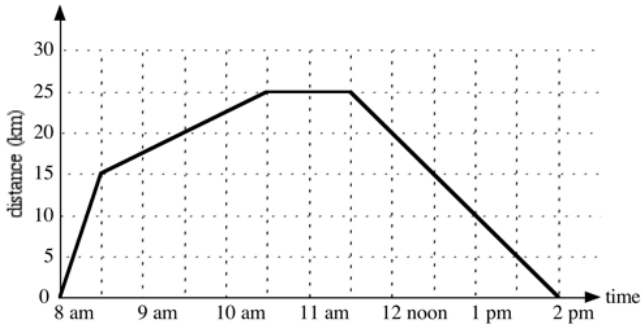
Evaluate: $\dfrac{10.6+1.65-0.25}{0.2}$

QUESTION 42

Evaluate: $(27\div -9)\times 2-6\times 5$

Refer to the graph below to answer questions 43 and 44

The travel graph below shows Musa's travel to visit his uncle.



QUESTION 43

What is the average speed of the return journey?

QUESTION 44

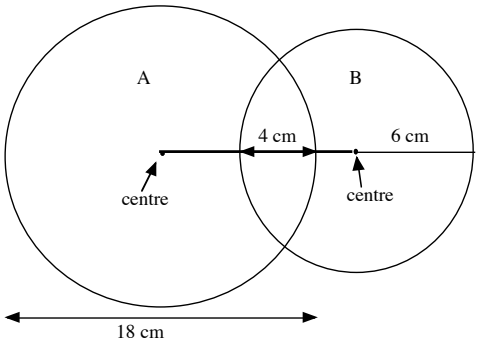
How long in hours did Musa spend with his uncle?

QUESTION 45

Circles A and B overlap. Circle A has a diameter of 18cm and Circle B has a radius of 6cm.

A straight line is drawn from the centre of Circle A to the centre of Circle B.

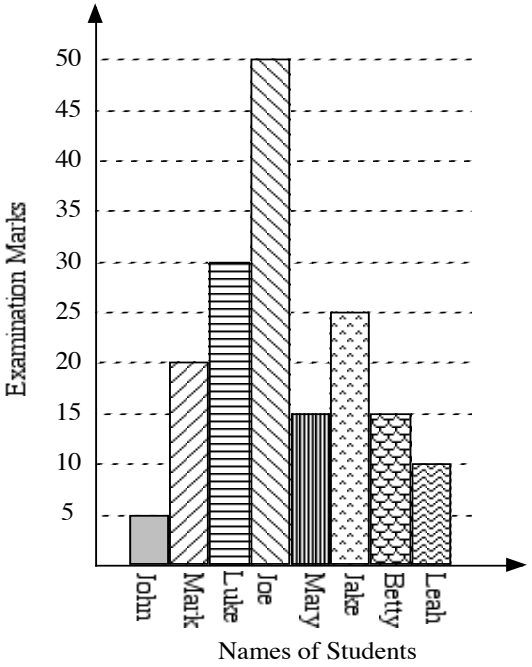
What is the distance between the two centres?



PART C (Question 46)

QUESTION 46

The graph below shows the Mathematics Examination result for 8 Grade 8 students. Study the graph and answer the questions that followed.



a) What is the highest score?

b) What is the mode for the examination marks?

c) What is the range of the examination marks?

d) How many students scored a mark below 20?

e) Calculate the average score correct to two decimal places.

END OF EXAMINATION