



BUKIT SION MIDDLE SCHOOL

Semester 2 Final Examination

Academic Year 2015-2016

A

MATHEMATICS

Multiple Choice

Grade 7
Semester 2
27 May 2016
120 minutes

Additional Materials: Multiple Choice Answer Sheet
Soft clean eraser
Pencil (type 2B is recommended)
Ruler, Compass, Protractor

READ THESE INSTRUCTIONS FIRST

Write in 2B pencil.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Write your name, candidate number, room number and grade on the Answer Sheet in the spaces provided.

You may use calculator.

There are **forty (40)** questions on this paper.

Answer all questions.

For each question there are four possible answers **A, B, C** and **D**.

Choose the one you consider correct and record your choice in **2B pencil** on the separate Answer Sheet.

Read the instructions on the Answer Sheet very carefully.

Each correct answer will score one mark.

Any rough working should be done in this booklet.

1 Given any set A and set B , if $A \cap B = \emptyset$, this implies that:

- A the two sets are equal.
- B the two sets are equivalent.
- C set A is a subset of B .
- D sets A and B are disjoint.

2 Given that $\mathcal{E} = \{\text{quadrilaterals}\}$, $P = \{\text{rectangles}\}$, $Q = \{\text{parallelograms}\}$ and $R = \{\text{rhombuses}\}$, then

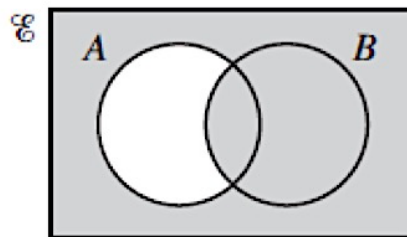
- A $P \cap R = \emptyset$
- B $Q \subset R$
- C $P \subset Q$
- D $R \cup P = Q$

3 If $A = \{4,5,1,4\}$, how many subsets does A have?

- A 4
- B 8
- C 16
- D 32

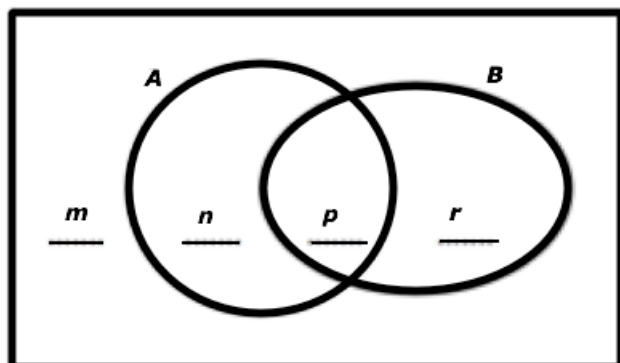
4 Which of the following below describes the Venn diagram below?

- A $A \cap B'$
- B $A' \cap B$
- C $A \cup B'$
- D $A' \cup B$



5 Given that $n(\mathcal{E}) = 21$, $n(A \cup B) = 19$, $n(A \cap B') = 8$, and $n(A) = 12$. Complete the diagram below and find the value of p .

- A 8
- B 4
- C 7
- D 2



For numbers 6 – 8, use the sets described below.

Given:

$$\mathcal{E} = \{x : x \text{ is an integer, } 12 \leq x \leq 39\}$$

$$A = \{x : x \text{ is a multiple of 5}\}$$

$$B = \{x : x \text{ is a perfect square}\}$$

$$C = \{x : x \text{ is odd}\}$$

6 The cardinality of the universal set is:

- A** 26
- B** 27
- C** 28
- D** 29

7 Determine the set that contains $\{15, 25, 35\}$.

- A** $A \cap B$
- B** $B \cap C$
- C** $A \cap C$
- D** $A \cap B \cap C$

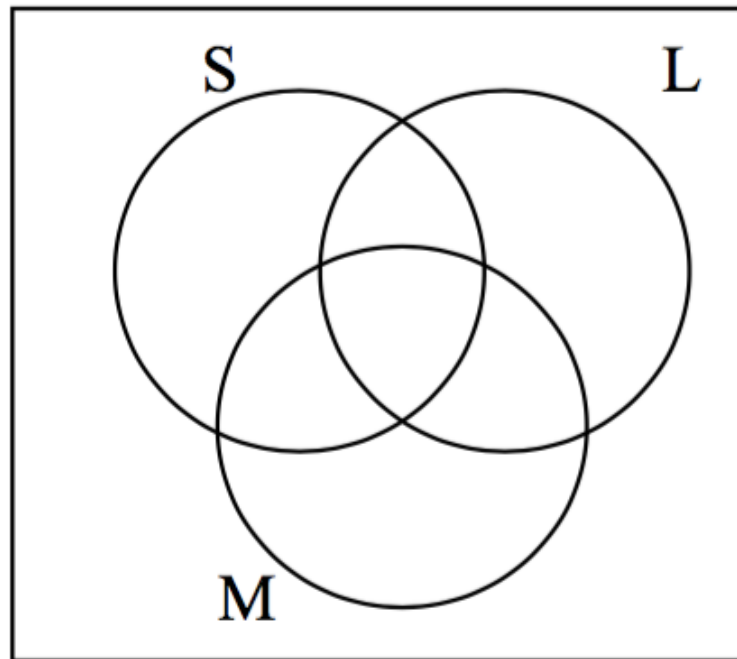
8 Which of the following complements of sets A , B and C is TRUE?

- A** $A' = \{x : x \text{ is a factor of 5}\}$
- B** $B' = \{x : x \text{ is a perfect cube}\}$
- C** $C' = \{x : x \text{ is even}\}$
- D** $A' \cap B' \cap C' = \{x : x \text{ is even factor of 5 and a perfect a cube}\}$

Refer to the given and diagram that follow to answer questions 9 and 10.

30 students were surveyed on the subjects they liked the most:

- 14 like Science (S)
- 16 like Literature (L)
- 18 like Mathematics (M)
- 8 like both Science and Mathematics
- 7 like Literature and Mathematics
- 6 like Science and Literature
- 1 likes all of the three subjects



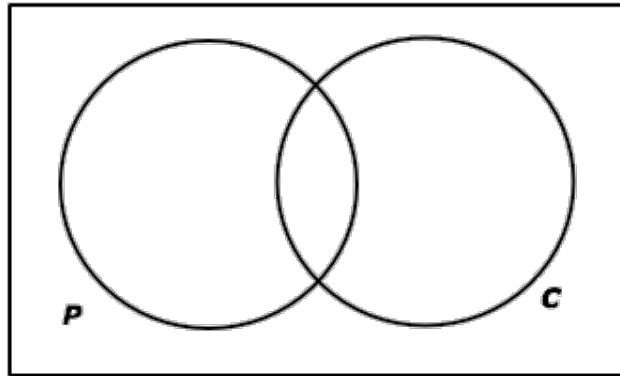
9 How many students like Science only?

- A** 1
- B** 2
- C** 3
- D** 4

10 How many students do not like any of three subjects?

- A** 1
- B** 2
- C** 3
- D** 4

- 11** There are 30 students in a class. 20 study Physics, 15 study Chemistry and 3 study either Physics or Chemistry.



Find the number of students who study both Physics and Chemistry.

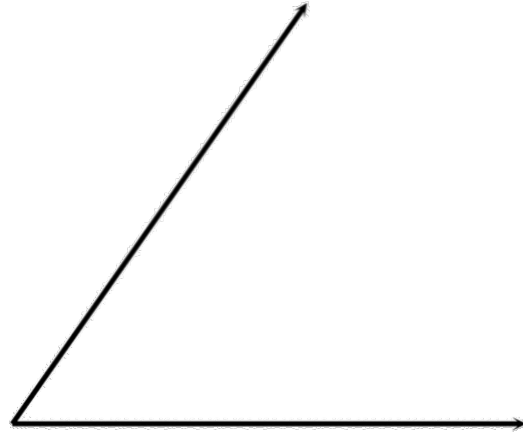
- A** 5
B 6
C 7
D 8
- 12** If $P = \{a, b, c, d, e\}$, $Q = \{a, c, e, d, t\}$ and $R = \{t, d, c, b, e\}$, then the intersection of P , Q and R is:
- A** $\{a, c\}$
B $\{a, c, e\}$
C $\{c, d\}$
D $\{c, d, e\}$
- 13** Which of the following sets is EQUIVALENT to $\{m, a, t, h, s\}$?
- A** $\{5\}$
B $\{m, a, t, h\}$
C $\{e, a, r, t, h\}$
D None of the above
- 14** If Z represents the set of integers, then $\{y : -1 < y < 4\}$ is:
- A** $\{-1, 4\}$
B $\{0, 3\}$
C $\{-1, 0, 1, 2, 3, 4\}$
D $\{0, 1, 2, 3\}$

15 If $P = \{p : p \text{ is a prime number less than } 10\}$, then P' is:

- A $\{2, 3, 5, 7\}$
- B $\{1, 2, 3, 5, 7\}$
- C $\{1, 4, 6, 8, 9\}$
- D $\{4, 6, 8, 9\}$

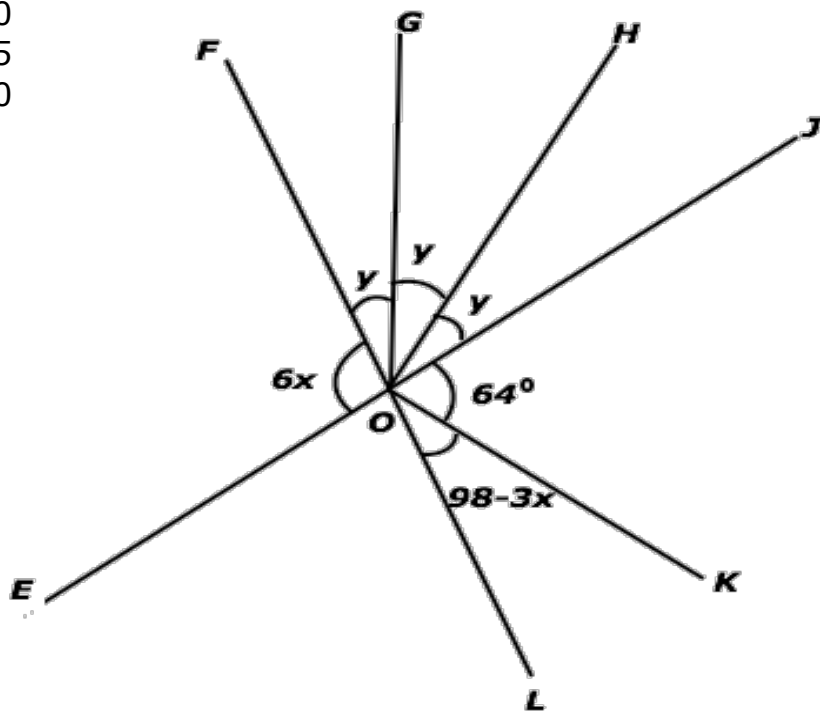
16 Use your protractor to measure the angle below.

- A 150°
- B 45°
- C 50°
- D 60°

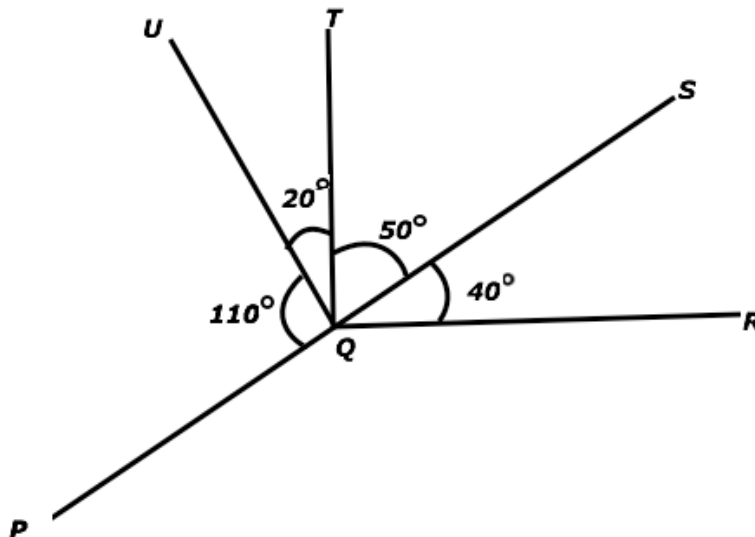


17 In the figure, FOL and EOJ are straight lines. What are the values of x and y ?

- A $x = 18, y = 24$
- B $x = 15, y = 20$
- C $x = 18, y = 25$
- D $x = 12, y = 30$



Refer to the diagram below to answer questions 18 to 20.



18 Which of the following statements is NOT true about the diagram above?

- A Angles RQS and SQT are complementary angles.
- B Angles PQT and SQT are supplementary angles.
- C Angles UQT and TQS are adjacent angles.
- D Angles PQU and SQR are opposite angles.

19 What is the value of angle PQR ?

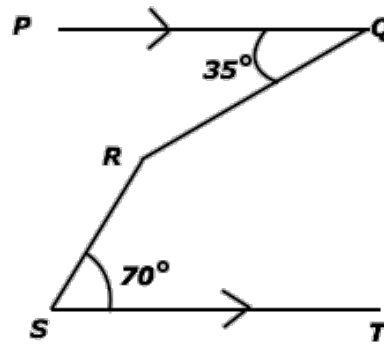
- A 140°
- B 130°
- C 120°
- D 150°

20 If the reflex angle RQU measures $(3x - 41)^\circ$, what is the value of x ?

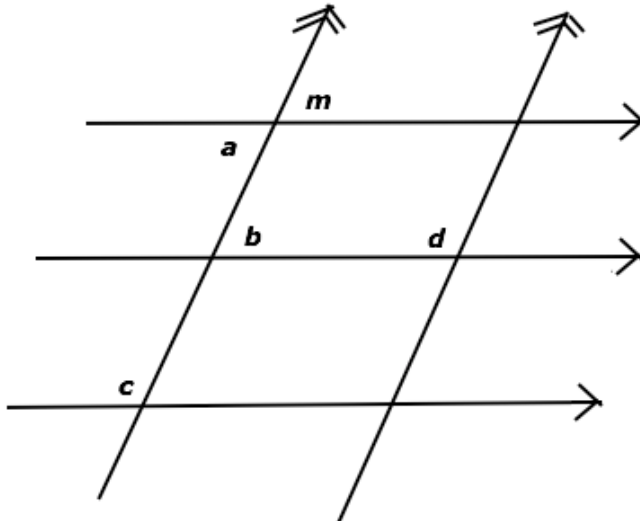
- A 90°
- B 100°
- C 95°
- D 97°

21 Find the measure of angle QRS .

- A 35°
- B 70°
- C 105°
- D 145°



Refer to the diagram below to answer questions 22 to 24.



22 Which of the following statements is NOT TRUE about the angles made when parallel lines are cut by transversals?

- A m and a are opposite angles
- B a and c are corresponding angles
- C a and b are alternate angles
- D $b + d = 180^\circ$

23 If $m = 40^\circ$, what is the value of $c + d$?

- A 180°
- B 360°
- C 80°
- D 280°

24 If $m = 7x - 20$ and $c = 4x + 35$, find the value of d .

- A 15°
- B 85°
- C 165°
- D 105°

25 A reflex angle is an angle that measures:

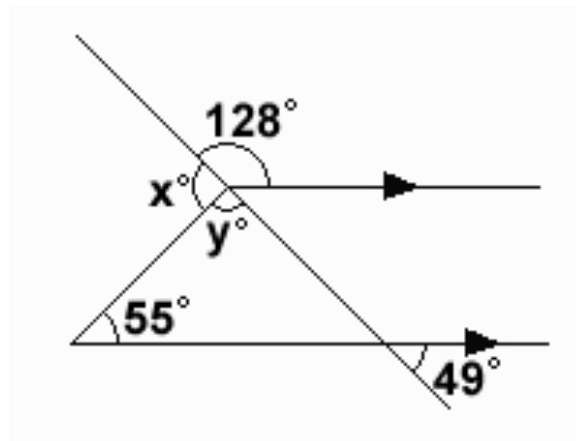
- A** less than 90° .
- B** exactly 90° .
- C** more than 90° but less than 180° .
- D** more than 180° but less than 360° .

26 The following statements are correct about points, lines and planes, EXCEPT:

- A** A line can be determined by two points.
- B** A plane tells position, has no size or shape.
- C** Three or more points on the same line are collinear points.
- D** An angle is formed when two rays come from the same point.

27 Find the value of x .

- A** 76°
- B** 49°
- C** 128°
- D** 107°



28 Mario is thinking of a quadrilateral.

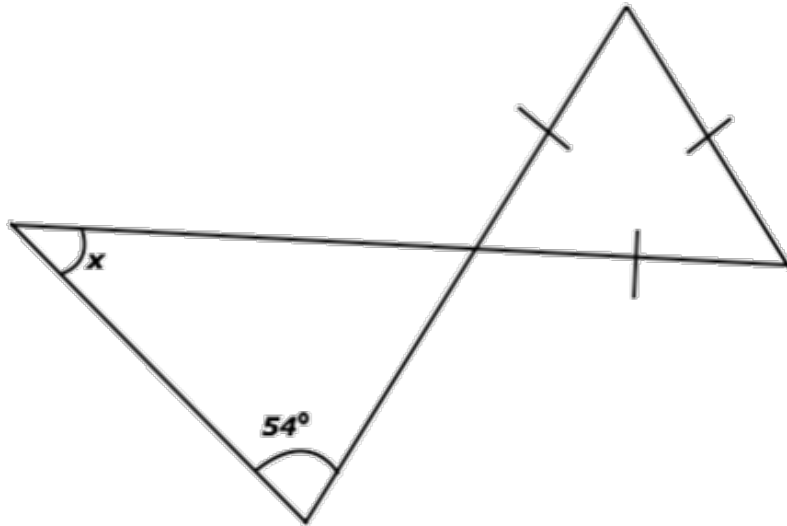
- It has two pairs of equal sides.
- It has two unequal diagonals.
- The diagonals are perpendicular to each other.

Which quadrilateral is he thinking about?

- A** Rhombus
- B** Square
- C** Kite
- D** Parallelogram

29 What is the value of x in the diagram below?

- A 54°
- B 60°
- C 45°
- D 66°



30 A triangle has angle measurements of 90° , 37° and 53° . What type of triangle is this?

- A Acute triangle
- B Obtuse triangle
- C Right Triangle
- D Isosceles Triangle

31 Study carefully the statements below about triangles.

- I: Some isosceles triangles are scalene triangles.
- II: Some isosceles triangles are obtuse triangles.
- III. Some equilateral triangles are acute triangles.
- IV. Some scalene triangles are acute triangles.

Which of the statements above are TRUE?

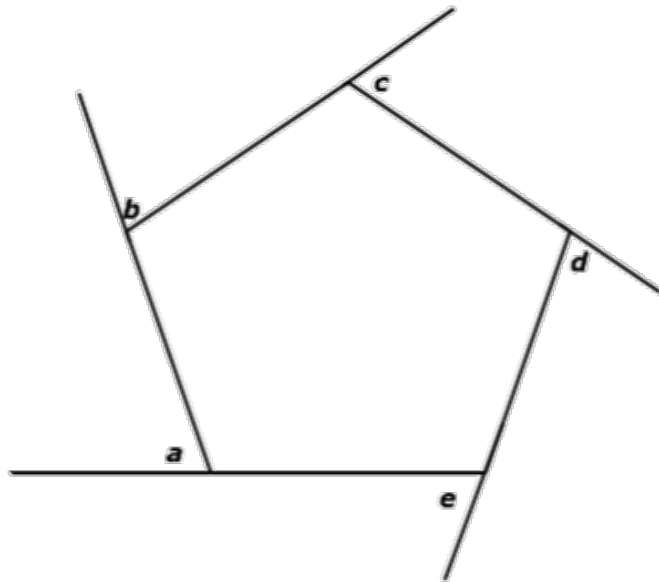
- A I and II
- B II, III and IV
- C I and III
- D II and IV

32 What is the sum of all the interior angles of a decagon?

- A 1800°
- B 1440°
- C 1620°
- D 360°

33 From the diagram below, find the value of $a + b + c + d + e$.

- A** 180°
- B** 360°
- C** 540°
- D** 108°



34 The number of diagonals in a polygon with 15 sides is:

- A** 90
- B** 100
- C** 180
- D** 156

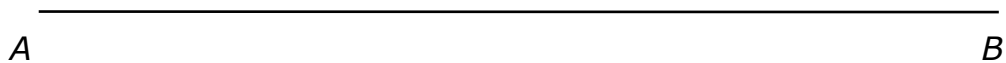
35 The interior angle of a regular polygon is 162° . Calculate the number of sides of the polygon.

- A** 20
- B** 18
- C** 22
- D** 15

36 If the interior angles of a quadrilateral is in the ratio of 2 : 3 : 4 : 6, find the measure of the largest angle.

- A** 48°
- B** 60°
- C** 144°
- D** 156°

For items 37 to 40, refer to the diagram below.



Using your compass and ruler, locate C if angle ABC is 65° and $AC = 8.4$ cm.

37 Approximate length of BC is:

- A** 8.9 cm
- B** 9.1 cm
- C** 9.5 cm
- D** 9.8 cm

Construct the perpendicular bisector of AB such that this bisector intersects AC at E .

38 What is the approximate length of BE ?

- A** 9.0 cm
- B** 8.3 cm
- C** 8.4 cm
- D** 8.7 cm

Construct the angle bisector of angle A , such that this bisector intersects the perpendicular bisector of AB at point F and at the same time it intersects CB at point G .

39 What is approximate measure of angle CAE ?

- A** 21°
- B** 25°
- C** 19°
- D** 30°

40 Find the approximate length of FG .

- A** 4.4 cm
- B** 5.1 cm
- C** 4.7 cm
- D** 4.9 cm

**** End of Exam ****