

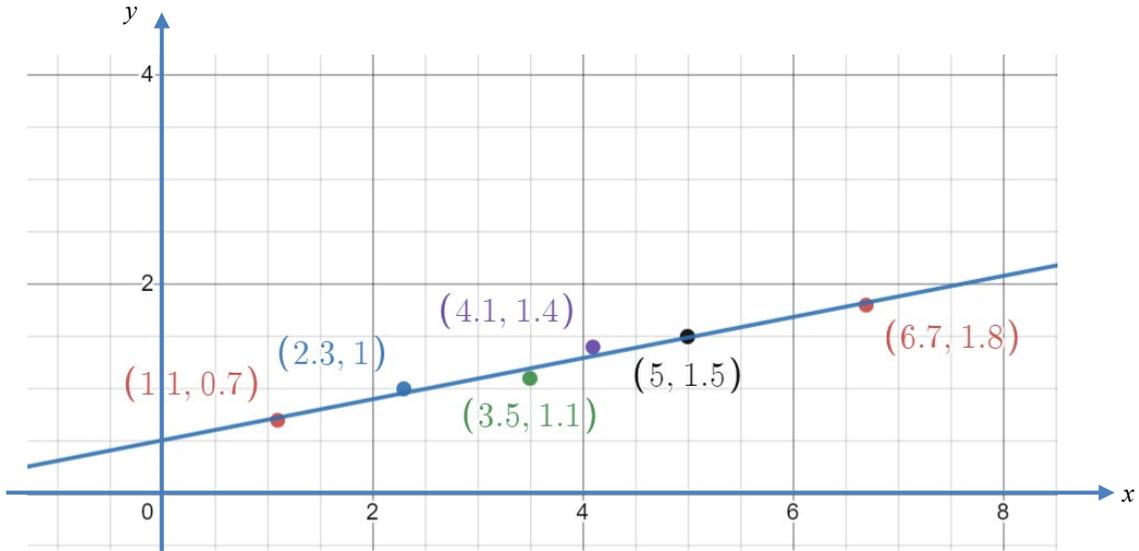
MATHEMATICS ENTRANCE TEST SAMPLE PAPER

Time Allowed: 1½ hours

Instructions to candidates:

1. This is a **closed-book** test.
 2. Alert the invigilator if you are facing technical difficulties.
 3. You are to **ensure** that:
 - a. your laptops, computers and any other devices used for this test is in good functioning order and have uninterrupted power supply and internet connection throughout the duration of the test
 - b. you are in a conducive environment throughout the duration of the test
 - c. your answers are correctly saved by the end of the test
 4. You are **allowed** to use:
 - a. an electronic calculator
 - b. blank papers (no larger than A4 size) for rough work, but the papers will not be accepted for submission at the end of the test.
 5. You are **not allowed** to:
 - a. leave the test or leave your devices throughout the duration of the test
 - b. use the washroom throughout the duration of the test
 - c. communicate with any person, either face-to-face or through any communication device, other than the invigilator
 - d. refer to any references, e.g. textbooks, resources from a laptop or smart devices, etc.
 - e. share materials (e.g. electronic calculator) during the test
 - f. use any communication devices such as mobile phones, tablets or smart watches (except if it is used to log in to Zoom during the test)
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1.



Enter all your answers **without spacing**.

The gradient of the above graph is _____. Leave your answer in 2 decimal places.

The y-axis intercept is _____. Leave your answer in 1 decimal place.

The equation of the above graph is _____.

2. A group of residents agrees to share the cost of chartering a bus to Malacca equally. The chartered fee is fixed at \$720. Before departure, four more residents join the group and each resident's share is reduced by \$6. How many residents were in the original group?

Enter your answer **without spacing**.

The number of residents in the original group is: _____
Leave your answer as a whole number.

3. The sum of the digits of a two-digit number is 12. If the digits are reversed, the number will be $\frac{4}{7}$ of the original number. Find the original number.

Enter your answer **without spacing**.

The number is: _____
Leave your answer as a whole number.

4. Simplify $\frac{\sqrt[3]{243}(a^3b^{-1}c)^3}{9^{\frac{3}{2}}ac^3}$ and leave your answer in positive exponents only.

Enter all your answers **without spacing**.

In the simplified expression,

- (i) the power of a in the numerator is _____
 Leave your answer as a whole number.
- (ii) the power of b in the denominator is _____
 Leave your answer as a whole number.
- (iii) the coefficient is _____
 Leave your answer as a fraction.

5. Simplify $\frac{9c^2 - 4a^2}{4a^3bc^2 - 6a^2bc^3}$.

Enter all your answers **without spacing**.

The answer is: _____ / $(2a^2bc^2)$.

6. Given that $\frac{R}{2} = \frac{3fgy^2}{y^2 - 2h}$, express y^2 in terms of R , f , g and h .

Enter all your answers **without spacing**.

The numerator is _____

The denominator is _____

Hence find the values of y^2 if $R = 26$, $f = 2$, $g = 1$, and $h = 3$.

$y^2 =$ _____ .

Leave your answer in 2 decimal places.

7. The mode of transport of 2160 people who work in a certain factory is shown in the table below.

Mode	No of people
Walk	x
MRT	162
Bus	1314
Car	408

Enter all your answers **without spacing**.

- (i) The value of x is: _____.
Leave your answer as whole number.
- (ii) The percentage of people who travel to work by MRT is _____ % .
Leave your answer in 1 decimal place.
- (iii) 60% of those who travel to work by bus are women. The number of men who travel by bus is _____.
Leave your answer as whole number.
8. At a supermarket, the cost of oranges to apples is 5:4. A man bought 4 oranges at \$2.00. With the same amount of money, how many apples can he buy?

Enter your answer **without spacing**.

The number of apples he can buy is: _____.
Leave your answer as whole number.

9. A man started work on the first day of January in a particular year and was paid \$135 per week for 24 weeks. His weekly salary was then raised by \$15 for the remaining 28 weeks in the year. What was his average monthly salary for the particular year?

Enter your answer **without spacing**.

His average monthly salary was _____.
Leave your answer as whole number.

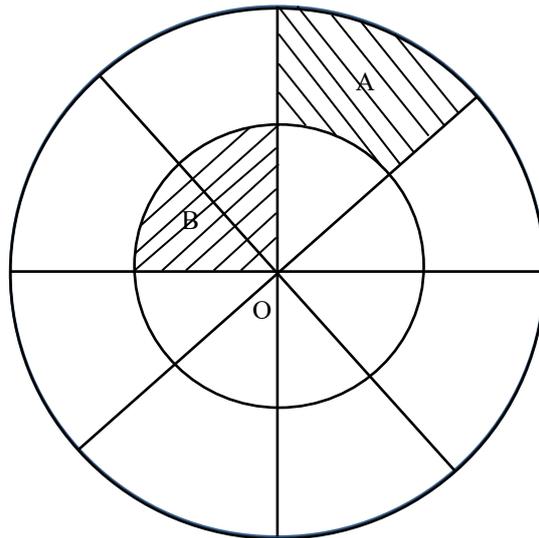
10. Alan can do a piece of work in 30 days, and Ben can do it in 6 days. If two of them are to work together, how long will it take to complete the same piece of work?

Enter your answer **without spacing**.

The time to complete the work together is: _____ days.

Leave your answer as a whole number.

11. In the figure on the right (not drawn to scale), O is the common centre of the two circles. The circles are divided into sectors of equal sizes. It is given that the area of the shaded portion A is twice that of the area of the shaded portion B.



Enter all your answers **without spacing**.

- (i) The percentage of shaded area is: _____ % .

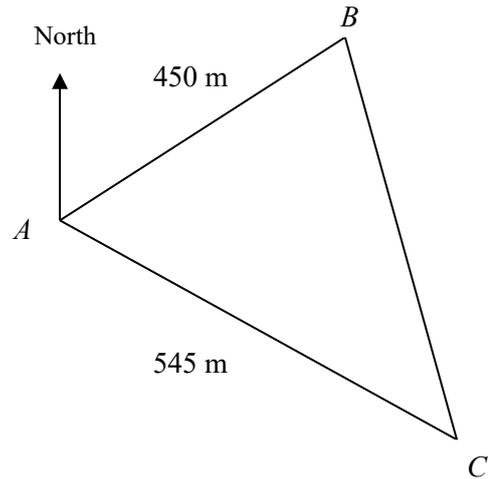
Leave your answer as a whole number.

- (ii) If the difference in area between the two shaded portions is 200 square units, calculate the diameter of the bigger circle.

The diameter of the bigger circle is: _____ units.

Leave your answer in 2 decimal places.

12. In the diagram below, A , B and C , are three points at sea level. Given $AB = 450$ m, $AC = 545$ m, the bearing of B from A is 072° and the bearing of C from A is 110° .

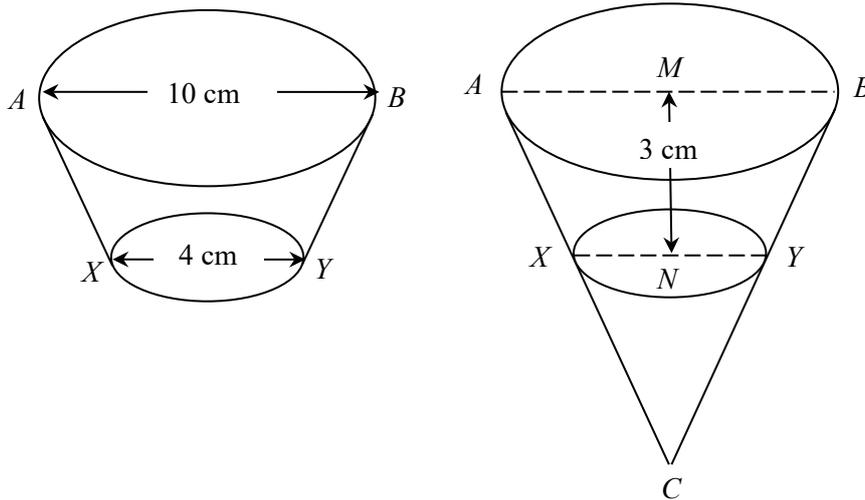


Enter all your answers **without spacing**.

Calculate the following:

- (i) The distance BC is _____ m.
Leave your answer in 2 decimal places.
- (ii) The $\angle ACB$ is _____ $^\circ$.
Leave your answer in 1 decimal place.
- (iii) The bearing of C from B is _____ $^\circ$.
Leave your answer in 1 decimal place.

13. A frustum is a solid cone with its top end cut off. The diagram on the right below shows how a frustum can be constructed from an inverted cone. The diameter of the base $AB = 10$ cm and the cone is cut horizontally at N such that $MN = 3$ cm and diameter $XY = 4$ cm.



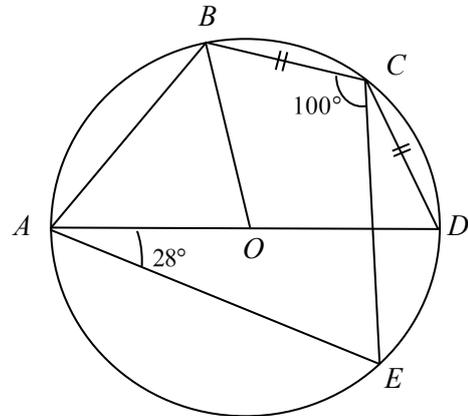
Enter all your answers **without spacing**.

Find the following:

- (i) The height, CN of the cone that was cut away, is _____ cm.
Leave your answer as a whole number.

- (ii) The volume of the frustum is _____ cm^3 .
 Leave your answer in 1 decimal place.
- (iii) The surface area of the frustum is _____ cm^2 .
 Leave your answer in 2 decimal places.

14. A circle, centre O , passes through the points A , B , C , D and E . AOD is a straight line. Given that $BC = CD$, $\angle DAE = 28^\circ$ and $\angle BCE = 100^\circ$.



Enter all your answers **without spacing**.

Leave all your answers as whole number.

Find the followings:

- (a) $\angle DCE$ is _____ $^\circ$
 (b) $\angle BAD$ is _____ $^\circ$
 (c) $\angle AOB$ is _____ $^\circ$
 (d) $\angle AEC$ is _____ $^\circ$

***** END *****