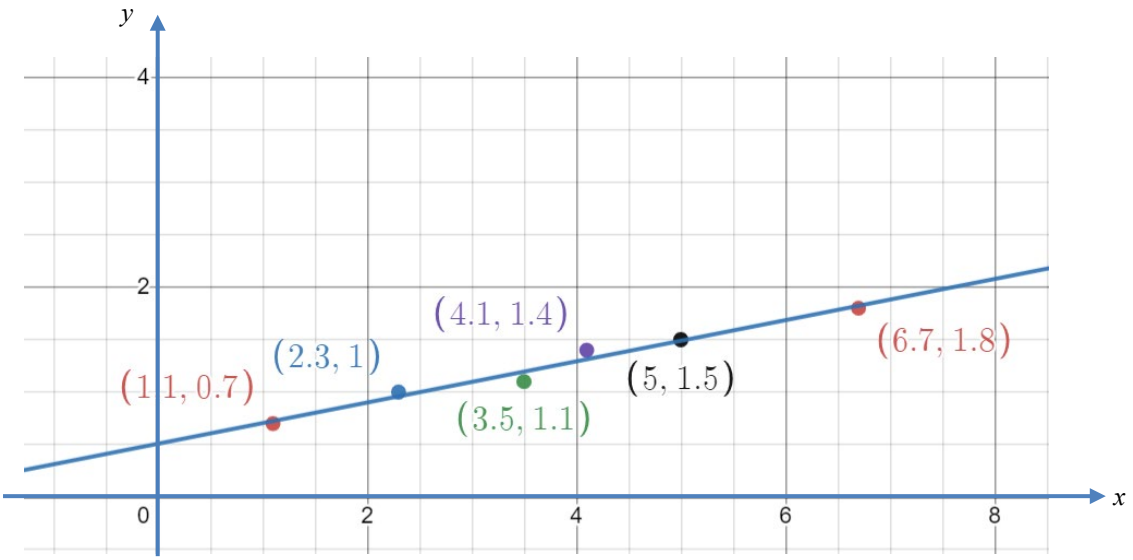
MATHEMATICS ENTRANCE TEST SAMPLE PAPER

Time Allowed: $1\frac{1}{2}$ 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)

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 $\dfrac{\sqrt[5]{243}\left(a^3b^{-1}c\right)^3}{9^{\frac{3}{2}}ac^3}$ 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 $\dfrac{9c^2-4a^2}{4a^3bc^2\ -\ 6a^2bc^3}$.

Enter all your answers **without spacing**.

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

6. Given that $\dfrac{R}{2}=\dfrac{3fgy^2}{y^2-2h}$, 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**.

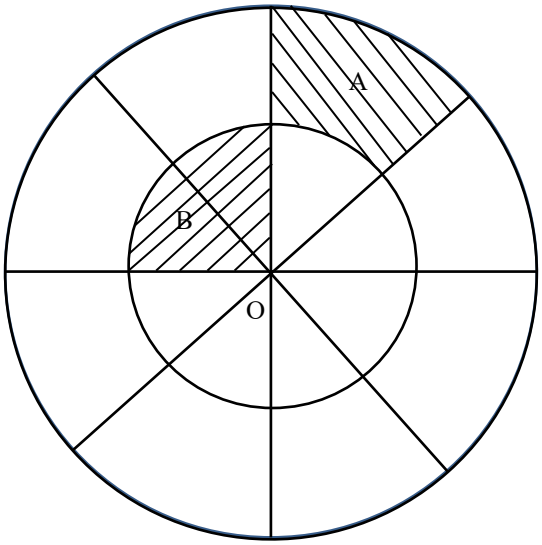
His average monthly salary was _____.
Leave your answer as whole number.

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.



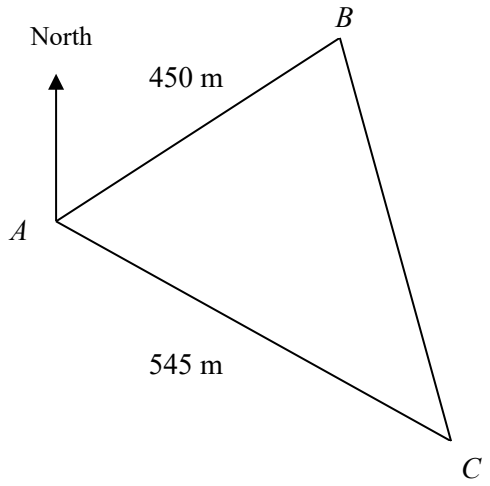
Enter all your answers **without spacing**.

(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**.

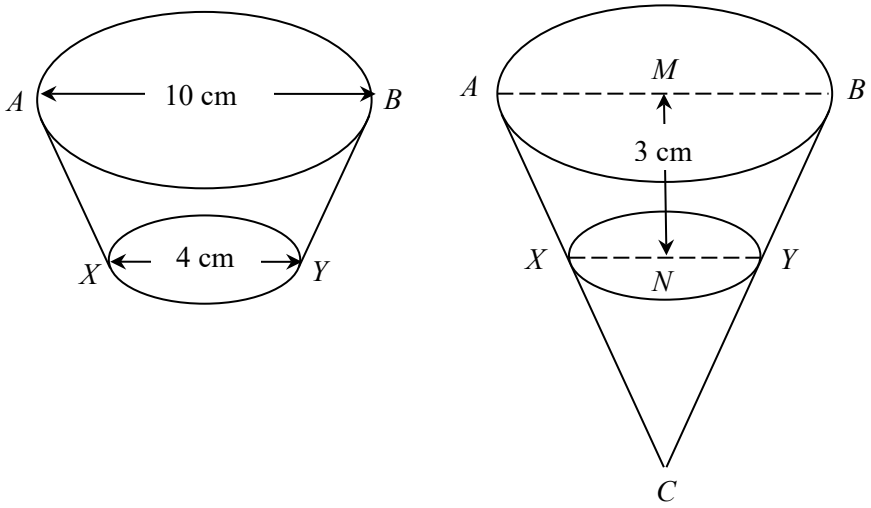
Calculate the following:

(i) The distance BC is _____ m.
Leave your answer in 2 decimal places.

(ii) The $\angle ACB$ is _____ ° .
Leave your answer in 1 decimal place.

(iii) The bearing of C from B is _____ ° .
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**.

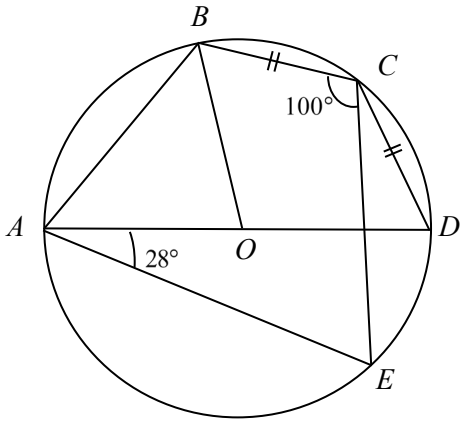
Find the following:

(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 $BC = CD$, $\angle DAE = 28°$ and $\angle BCE = 100°$.



Enter all your answers **without spacing**.

Leave all your answers as whole number.

Find the followings:

(a) $\angle DCE$ is _____ °
(b) $\angle BAD$ is _____ °
(c) $\angle AOB$ is _____ °
(d) $\angle AEC$ is _____ °

******** END *********