The City School

Unified Mid-Year Examinations

2018 – 2019

Class 9

SCHOOL NAME:

INDEX NUMBER: | | | | | **DATE:**

MATHEMATICS (SYLLABUS D) **4024/22**

Paper 2 **2 hours**

Candidates answer on the Question Paper.

Additional materials: Geometrical Instruments

READ THESE INSTRUCTIONS FIRST

Write your School name, Index number and Date in the spaces provided.
Write in dark blue or black pen.
You may use a pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.

Answer all questions.

If working is needed for any question it must be shown in the space below that question.
Omission of essential working will result in loss of marks.
You are expected to use an electronic calculator to evaluate explicit numerical expressions.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For π, use either your calculator value or 3.142, unless the question requires the answer in terms of π.
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 80.

Invigilated By: _____ Checked By: _____ Marks Tallied By: _____

This document consists of **11** printed pages and **1** blank page.

1. (a) Express as a fraction in its lowest terms."

$$\frac{a}{a-5} - \frac{2}{a+1}$$

Answer: a)..... ....[2]

(b) If H is inversely proportional to $(2p-3)^3$ and

H= -5 when p=1, find

(i) the value of H when p=2.5

(ii) the value of p when H=$\frac{5}{27}$

Answer: i)..... ....[2]

Answer: ii)..... ....[2]

(c) Given that $\sqrt{3C-5} = B$

(i) make C the subject of the formula

(ii) find the vlaue of C when $B = 15$

Answer: i)..... ....[2]

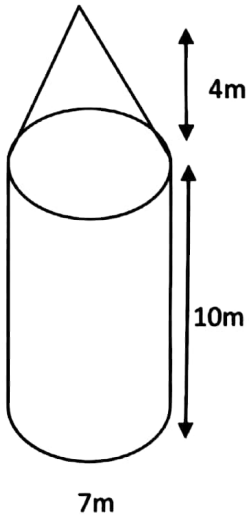
Answer: ii)..... ....[2]

2. (a) Evaluate and express your answer in the standard form.

$8.4 \times 10^5 \div 2.1 \times 10^4$

Answer: a)..... ....[3]

(b) Calculate the volume of solid.

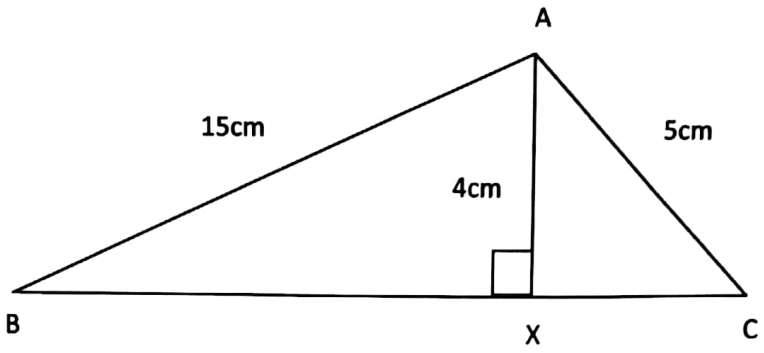


Answer: ....[3]

(c) From the figure, calculate:

(i) the length of BC correct to 3 significant figures.

(ii) BAX



Answer: i)..... ....[2]

Answer: ii)..... ....[2]

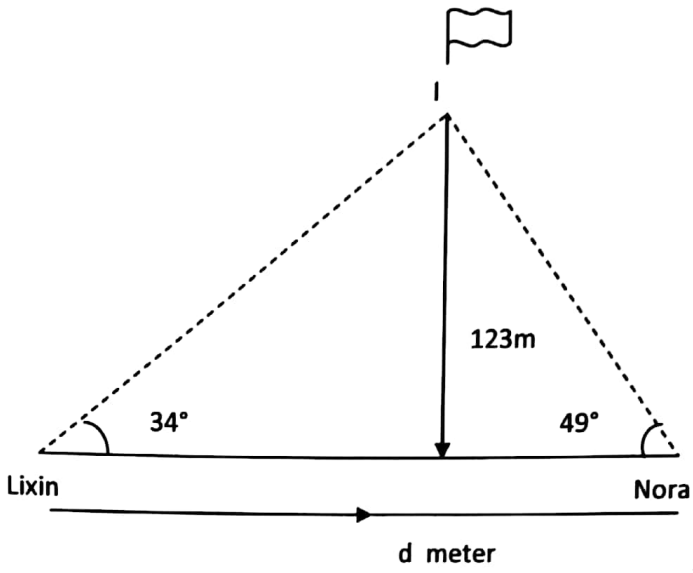
3. **(a)** The variables x and y are connected by the equation $y = k\sqrt{x+1}$, where K is a constant. Find the value of p and of q.

X	224	-1	Q
y	5	P	3 1/3

Answer: ....[4]

(b) Lixin and Nora are standing at a distance d meter apart. They notice a flag pole on an island 123 meter away.

Given that ILN 34° and INL = 49°, find the value of d.



Answer: ....[3]

(c) Find the volume of the sphere with the given radius is 5.8 m.

Answer: ....[3]

4. (a) Write as a single fraction in its simplest form.

$$\frac{5}{x+4} + \frac{2}{x-1}$$

Answer: ....[3]

(b) Solve the equation

$45 - (p + 3) = 2p$

Answer: ....[2]

(c) Simplify $p^2 (p^2 - 3p^{-2})$

Answer: ....[2]

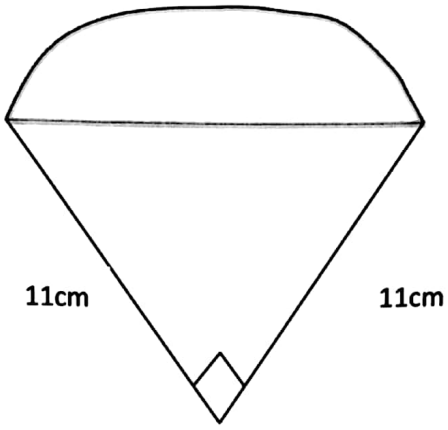
(d) Simplify $\dfrac{5x^2 - 20}{10x^2 + 10x - 20}$

Answer: ....[3]

5. **(a)** Find [3]

(i) the area of triangle

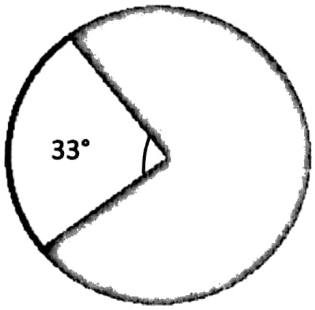
(ii) the shaded area of the given figure.



Answer: i)..... ....

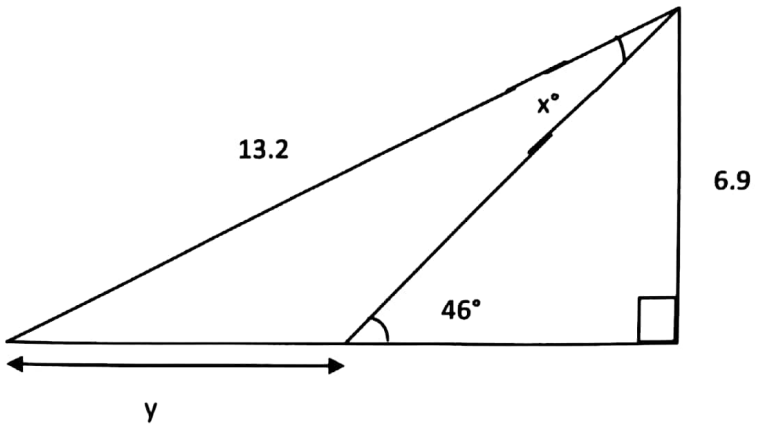
Answer: ii)..... ....

(b) Find the radius of the circle if Area of major sector is 369cm².



Answer: ....[3]

(c) Calculate the value of unknown x and y.



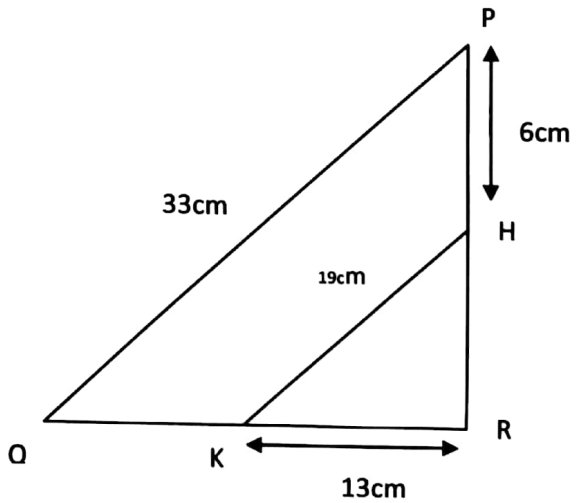
Answer: x) ....[2]

Answer: y) ....[2]

6. In ΔPQR, PQ=33cm and R = 90°. H lies on PR such that PH = 6cm and K lies on OR such that KR = 13cm. Find the length of

(i) HR

(ii) QK



Answer: i) ....[2]

Answer: ii) ....[2]

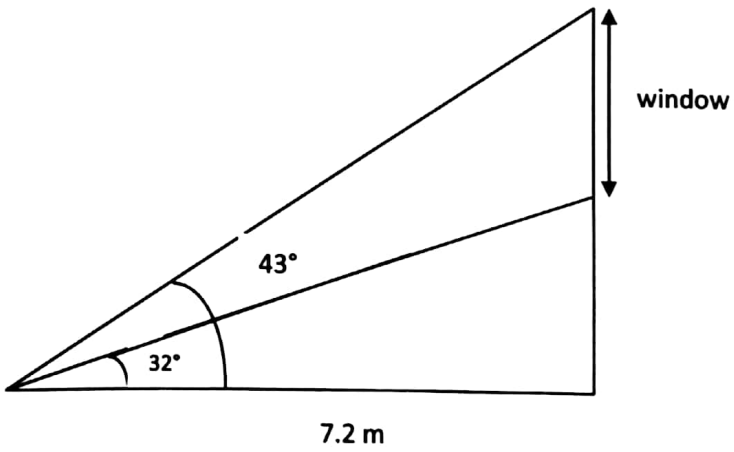
(b) A folded napkin has a triangular cross section of sides x cm, $(x+1)$ cm and $(x+2)cm$. If one of the angles of triangle is 90°, find the value of x.

Answer: ....[3]

(c) A ladder 3.4m long rests against a wall at an angle of 78° to the horizontal. Find the distance of the ladder from the foot of the wall.

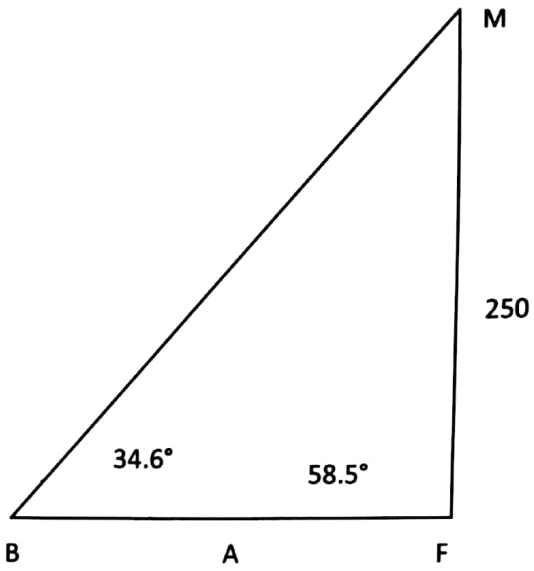
Answer: ....[3]

7. **(a)** The angles of elevation of the top and bottom of a window from a point 7.2 m from its foot are 43° and 32° respectively. Calculate the height of the window.



Answer: ....[5]

(b) The following figure shows a man M standing on top of a cliff 250 m high. He observes two ships, A and B, and their angles of depression to be 58.5° and 34.6° respectively. Find the distance between A and B.



Answer: ....[5]

8. **(a)** It is given that $m = \frac{n(a+l)}{2}$

(i) Find the value m when n = 20, a = -5 and l = 17.

Answer: ....[2]

(ii) Express *l* in terms of m, n and a.

Answer: ....[2]

(b) In a circle, OPQ is a sector of a circle with center O and radius 5cm.

Given that POQ = 50°.

Calculate

(i) The perimeter of the sector

(ii) The area of the sector

Answer: (i) ....[3]

Answer: (ii) ....[3]