

Final Term Examination 2011

Mathematics- X Paper – II

Time allowed: 2 hours 25 minutes

Maximum Marks: 45

INSTRUCTIONS:

Please read the following instructions carefully.

- 1 . Check your name and school information.**

NAME: _____ CLASS: _____

Roll No: _____ Candidate's sign: _____

Invigilator signature: _____ Checked by: _____

2. RUBRIC: There are ten questions. Answer all TEN questions:

3. When answering the questions:

- Read each question carefully.
- Use **ONLY** black ink.
- Do not use staples, paper clips, glue or correcting fluid. **DO NOT** write outside the answer box.
- Complete your answer in the allocated space only.

4. The marks for the questions are shown in brackets ().

5. You may use a simple calculator if you wish.

Algebraic Manipulation:

Q.1. (a) Find the value of ' K ' to make $x^2 + Kx + 1$ a perfect square:

(2 marks)

Solution:

Q.1. (b) Find the square root of following equation by division method:

(3 marks)

Solution:

$$\frac{9}{x^4}$$

$$x^4 + -4x + -6$$

OR

Q.1 (a) Find the H.C.F of $6y^3+5y^2-34y+15$, $6y^3 - 37y^2 + 57y - 20$ and $3y^3 - 8y^2 - 31y + 60$ by division method (3 marks)

Solution:

Q.1 (b) if the H.C.F of two polynomials $2x^4 + 3x^3 - 13x^2 - 7x + 15$ & $2x^4 + x^3 - 20x^2 - 7x + 24$ is $x^2 + 2x - 3$, then by using the relationship between L.C.M & H.C.F find the L.C.M of the polynomials: (2 marks)

Solution:

Partial Fractions:

$$\frac{1}{x^2(x+1)}$$

Q.2) Resolve into partial fraction:

(3 marks)

Solution:

Either

Linear Equations and Inequalities:

Q.3. (a) Find the solution set of $3x - 2 > 7$ where $x \in \mathbb{R}$:

(2 marks)

Solution:

Q.3. (b) An object is fired vertically upward and its velocity is represented by $V = 80 - 32t$, where t is the time measured in seconds. When will the velocity be between 32 m/s and 64 m/s:

(3 marks)

Solution:

OR

Q.3. (a) x is an integer such that $-8 < x < 4$, y is an integer such that $-3 < y < 2$.

(3 marks)

Calculate:

i). the greatest value of $x + y$

ii). the least value of $x y$

iii). the greatest value of $x^2 + y^2$

Solution:

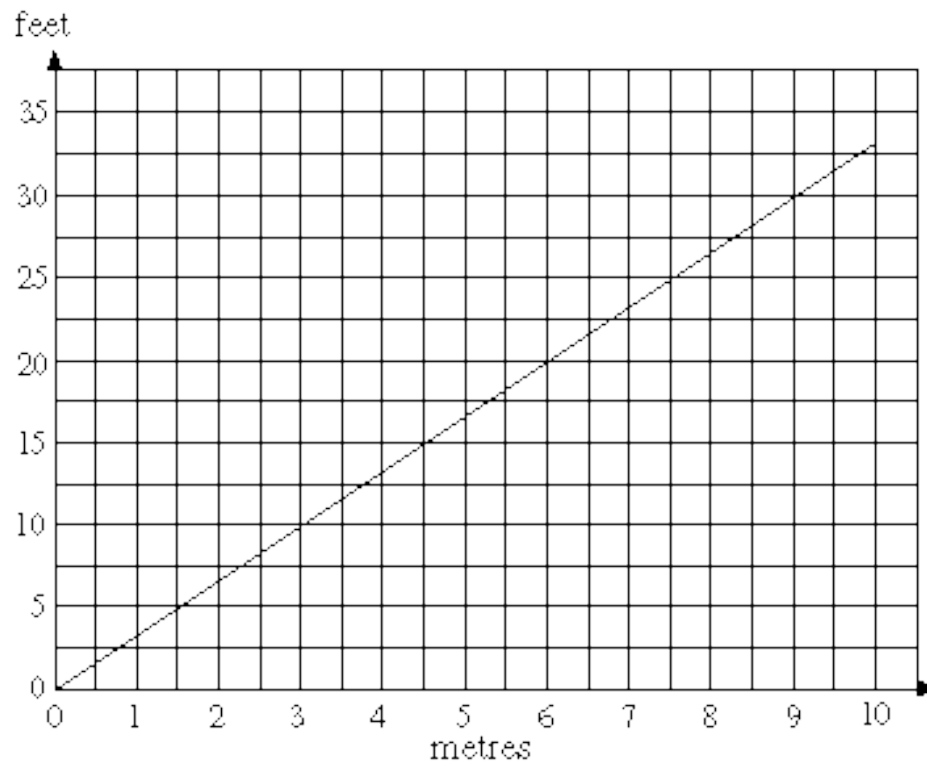
**Q.3. (b) find the integer x such that $x+1 < 7 < x + 3$:
marks)**

(2

Solution:

Linear Graphs and their Application:

Q. 4 (a) Graph between length in meters (m) and length in feet (ft) is shown below. In a long-jump competition, Smith jumps 4 meters and James jumps 12 feet. With the help of conversion graph estimate who wins the competition: (2 marks)

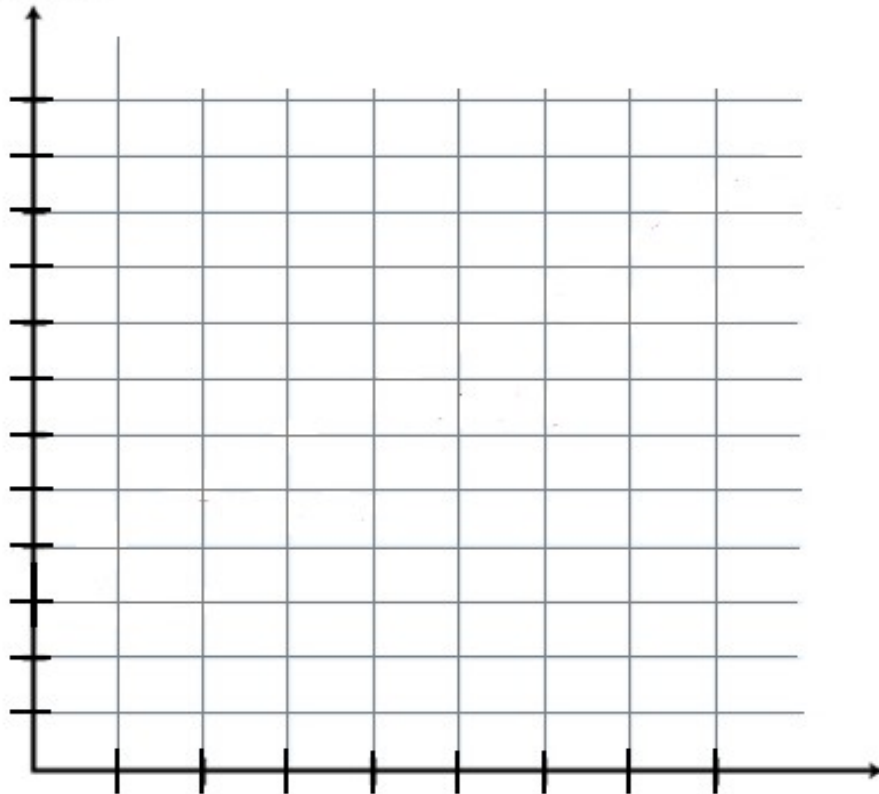


Solution:

Q.4. (b) Draw the graph to show the conversion of Celsius temperature to Fahrenheit temperature. Also find from graph the value of 134°C in Fahrenheit scale: (0°C = 32 div F) (3 marks)

**Fahrenheit
Temperature**

Conversion of Celsius Temperature to Fahrenheit Temperature



Celsius Temperature

Solution:

Quadratic Equations:

Q.5. (a) Find the solution set of the following equations by using quadratic formula:

(2 marks)

$$x^2 + \frac{1}{2}x - \frac{3}{2} = 0$$

Solution:



Q.5. (b) A right angled ABC is given, if the side AB = 3x, BC = (x + 1), AC = (3x + 1), then form an equation in variable 'x' and find its value:

(2 marks)

Solution:

Either

Introduction to Coordinate Geometry:

Q.6. Show that $(-8,-3)$, $(-2, 6)$, $(8, 5)$ and $(2, -4)$ are the vertices of a Parallelogram:

(3 marks)

OR

Q.6.If the distance between two points $(x, -2)$ and $(-2, 2)$ is 5 units. Find the value of x :

(3

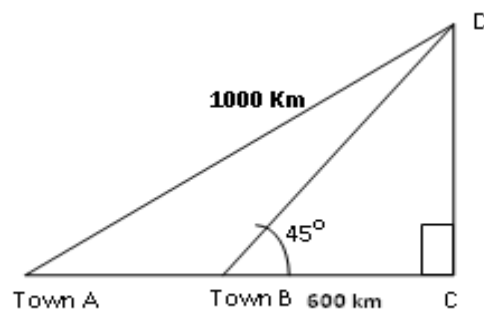
marks)

Solution:

Either

Introduction to Trigonometry:

Q.7. (a) In the given figure, Aerial distance of town A from an aero plane is shown which is 1000 km. if the town B is 600 Km away from the image of the aero plane, if the angle of elevation to the plane from town B is 45° . Find the distance between the two towns: (2 marks)



OR

Q. 7. (a) Convert $38^\circ 24' 30''$ into decimal form:

(2 marks)

Solution:

Either

Q.7. (b) Prove that: $\cos^2 x - \sin^2 x = 1 - 2\sin^2 x$

(2 marks)

OR

Q.7. (b) Find the values of trigonometric ratios for 45° :

(2 marks)

Solution:

Either

Chords and Arcs: SLO # 26.1.1

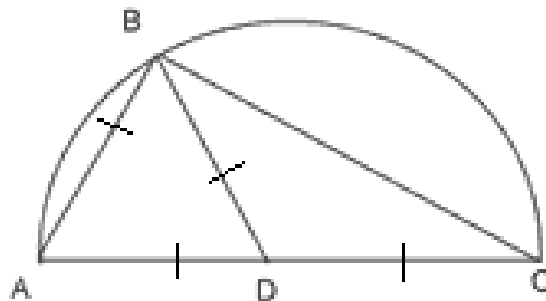


Q. 8. (a) Three equal chords AB, BC & AC are drawn in a circle (inscribed) so that they form a triangle. O is the centre of the circle. Find their angles and angle BOC. (2 marks)

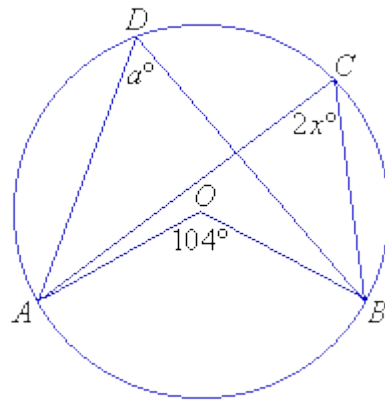
Solution:



Q.8. (b) $\triangle ABC$ is right angled at B. On the side AC, a point D which is the center of the circle, such that $AD = DC$ and $AB = BD$. Find the measure of $\angle CAB$. (2 marks)



Q. 8. (a) Find the value of a & c:

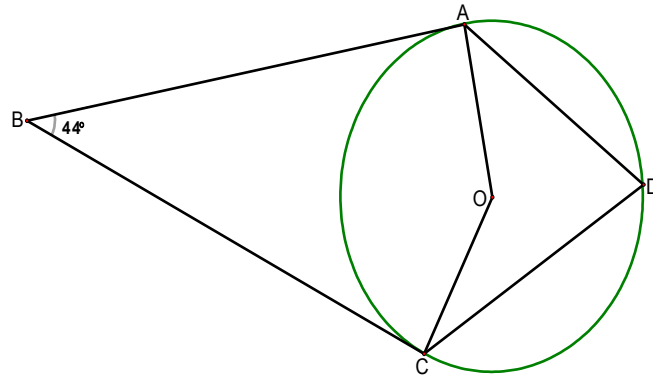


Solution:

Tangent to a Circle: SLO # 25.1.1

Q.9. (a) Find the angle ADC:

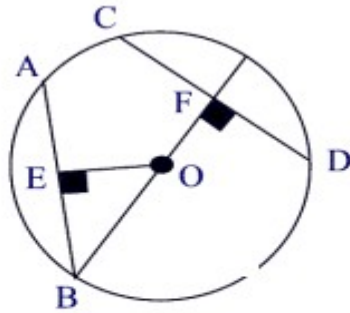
(2 marks)



Solution:

Chords of a Circle: SLO # 24.1

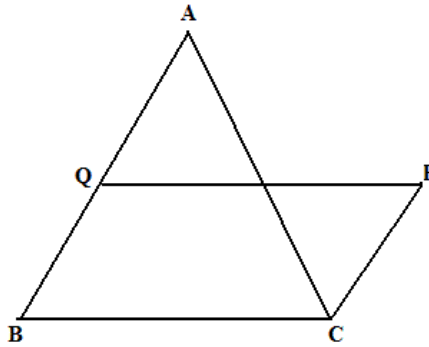
Q.9. (b) Two chords AB & CD are shown which are at 3 cm from the center of the circle O. If the diameter of the circle is 10 cm, find the distance between the chords and their lengths: (2 marks)



Solution:

Theorems Related with Area: SLO # 23.1.1

Q.10. (a) Parallelogram BCPQ and triangle ABC lie on the same base and have same area. The sides of the triangle are 26m, 28m and 30m. The base of the parallelogram is 28m. Find the height of the parallelogram. (2 marks)

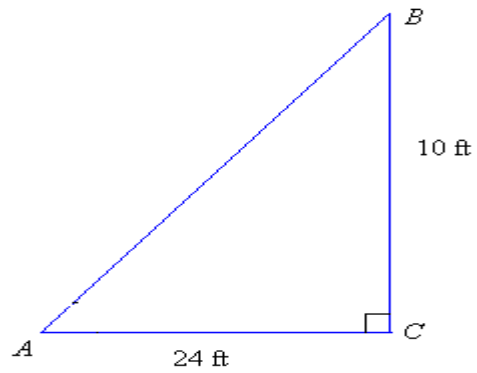


Solution:

Pythagoras' Theorem: SLO #22.1.1

Q.10. (b) Find the length of AB:

(2 marks)



Solution:

Tangent to the Circle: SLO #28.3.3

Q.10. (a) Draw transverse common tangent to the two circles having radii 3cm each Distance between their centre is 7.5 cm. Measure the distance of the tangential segment: (2 marks)

Solution:

Circles attached to Polygons: SLO # 28.2.8

Q.10. (b) Circumscribe a regular hexagon about a given circle:

(2 marks)

Solution:

