Worksheet 8.3

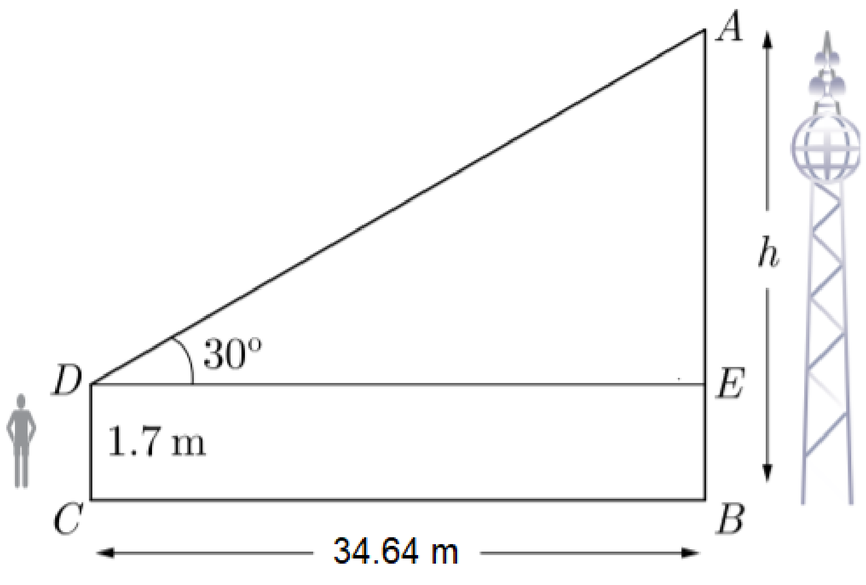
Marks - 25

Case study based questions

10th Maths

Chapter 8 Introduction to Trigonometry

Passage - 1 **5 Marks**



Kiara with her family was visiting to her grandfather's house . When she reached her grandfather's house . She observes an electric tower which is is 34.64 m away from her. Given that her height is 1.7 m and the angle of elevation she is observing to the top of tower is 30o. Find the answers to the following questions:

Q 1. What is the length AE?

(1) 20 m
(2) 20.7 m
(3) 21 m
(4) 21.7 m

Q 2. Find the height of tower.

(1) 20 m
(2) 20.7 m
(3) 21 m
(4) 21.7 m

Worksheet 8.3

Marks - 25

Q 3. What is the length AD?

(1) 38 m
(2) 39 m
(3) 40 m
(4) 41 m

Q 4. Find
$sin\angle(ADE\ +\ EAD)$

(1) 0
(2) 1
(3) $\frac{1}{2}$
(4) Not defined

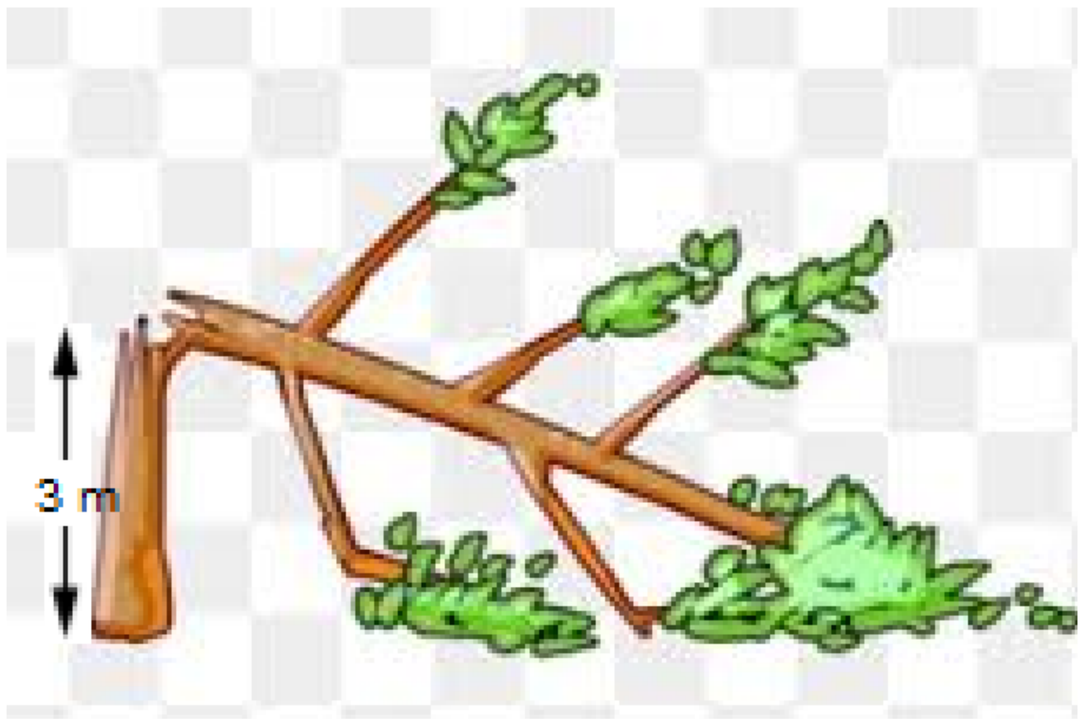
Q 5. Find
$cos\angle(ADE\ +\ EAD)$

(1) 0
(2) 1
(3) $\frac{1}{2}$
(4) Not defined

Passage - 2 **5 Marks**

Worksheet 8.3

Marks - 25



Mawsynram is a town in East Khasi Hills district of Meghalaya in northeastern India . Mawsynram receives the highest rainfall and is known as wettest place of India . On one stormy night with a heavy rain, a tree broke due to storm and the broken part bends so that the top of the tree touches the ground. The distance between the foot of the tree to the point where the broke (PQ) is 3 m. The original height of the tree (RQ) was 9 m. Find the answers to the following questions:

Q 1. Find $\angle QPR$

(1) 30°
(2) 45°
(3) 60°
(4) 75°

Q 2. Find $\angle PRQ$

(1) 30°
(2) 45°
(3) 60°
(4) 75°

Worksheet 8.3

Marks - 25

Q 3. What is
$sin\angle QPR\, cos\angle PRQ + sin\angle PRQ\, cos\angle QPR$

(1) 0
(2) 1
(3) $\frac{1}{2}$
(4) $\frac{3}{2}$

Q 4. What is the length QR?

(1) 5 m
(2) 4.8 m
(3) 5.2 m
(4) 5.4 m

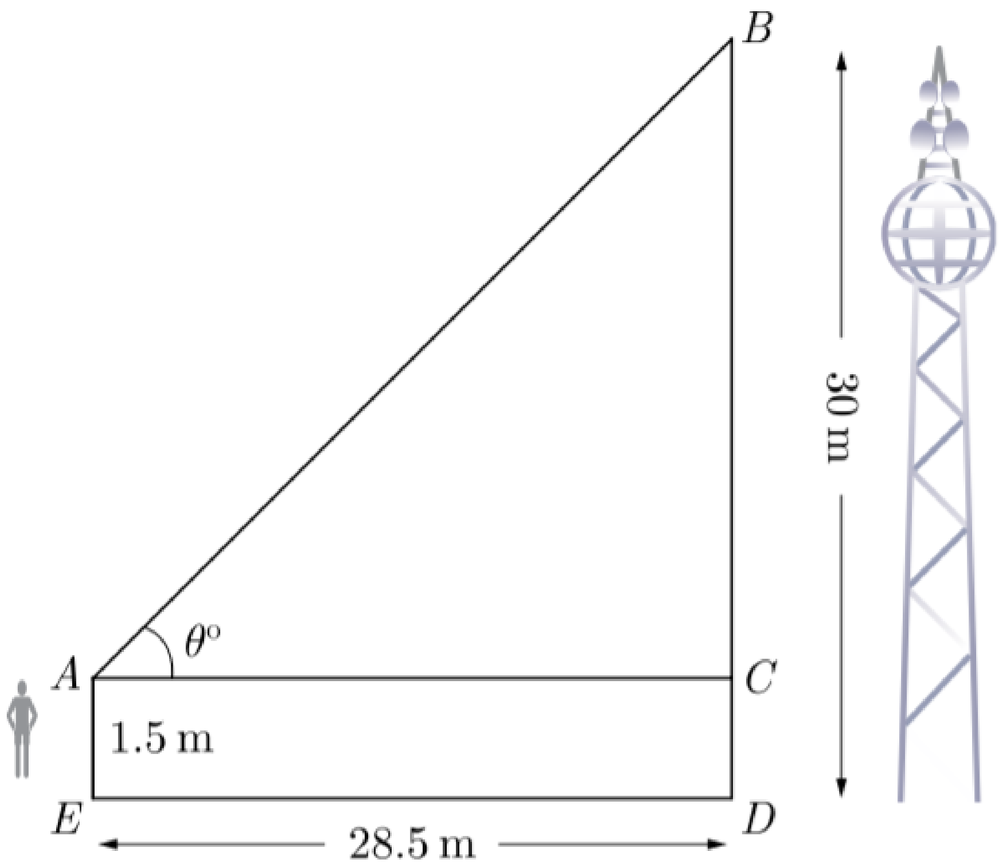
Q 5. What is
$sin\angle QPR\, cos\angle PRQ - sin\angle PRQ\, cos\angle QPR$

(1) 0
(2) 1
(3) $\frac{1}{2}$
(4) $\frac{3}{2}$

Passage - 3 **5 Marks**

Worksheet 8.3

Marks - 25



Sumit is a student of class X, and today his teacher explained about the topic introuction to trigonometery . Returning back to his home he noticed a tower, 30 m high, and stops at a distance of 28.5 m from it. Sumit is 1.5 meters tall. Find the answers to the following questions:

Q 1. Find the angle of elevation θ of the top of the tower from his eye.

(1) 30°
(2) 45°
(3) 60°
(4) 75°

Q 2. Find
$sin\theta$

(1) 0
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Worksheet 8.3

Marks - 25

Q 3. Find
$cos(90 - \theta)$

(1) 1
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

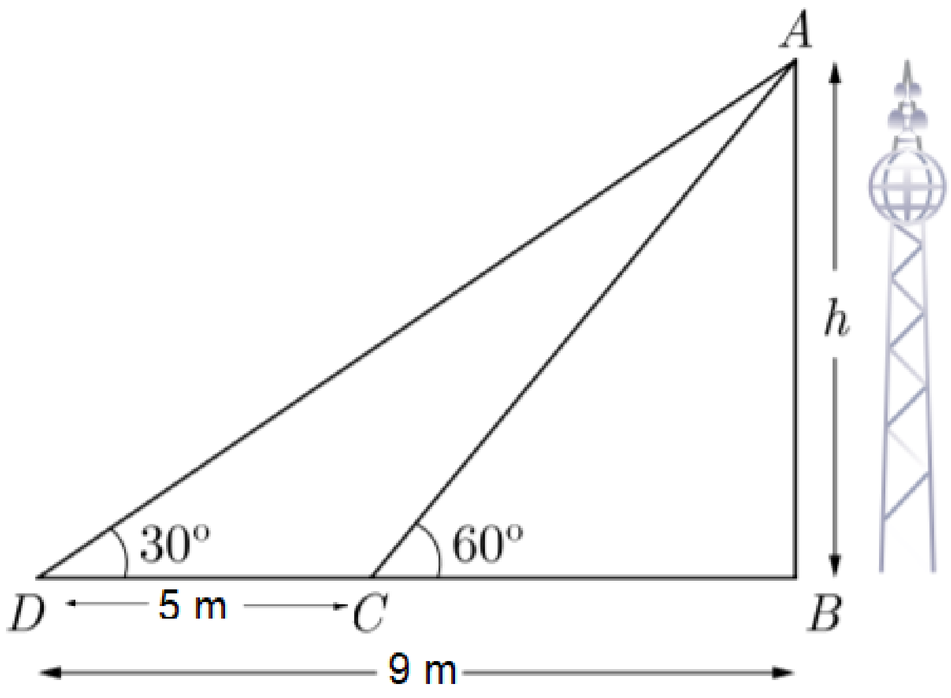
Q 4. Find
$1 - cos^2\theta$

(1) $\frac{3}{2}$
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Q 5. Find the length AB.

(1) 40.31 m
(2) 40.39 m
(3) 41.29 m
(4) 41.13 m

Passage - 4 **5 Marks**



Worksheet 8.3

Marks - 25

Rita was looking at the top of a tower of height h from a distance of 9 m from the foot of the tower. To get a better look, she moves 5 m ahead in the same direction. The angles of elevation of the top of a tower are respectively 30° and 60°. Find the answers to the following questions:

Q 1. The value of h is ____

(1) 6.4 m
(2) 5.19 m
(3) 5.8 m
(4) 6.2 m

Q 2. Find the length AD.

(1) 10.96 m
(2) 10.89 m
(3) 10.92 m
(4) 10.39 m

Q 3. Find the length AC.

(1) 5.99 m
(2) 7.28 m
(3) 7.33 m
(4) 7.19 m

Q 4. Find $sin\angle ADB$

(1) 0
(2) $\frac{1}{2}$

---

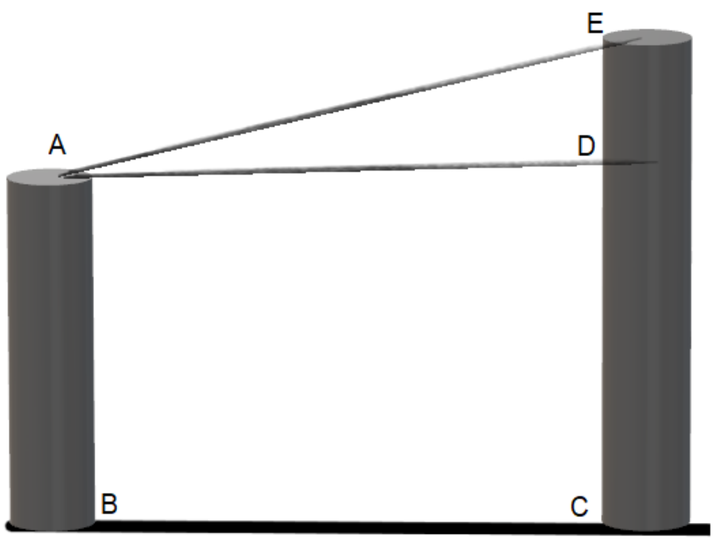
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Q 5. Find
$sin\angle CAB$

(1) 1
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Passage - 5

5 Marks



Diwali is a festival of lights and one of the major festivals celebrated by Indians. Diwali, also known as Deepawali is one of the most loved festivals of the year in India. On the occasion of Diwali Ram was decorating his house and its surrounding with fairy lights. Ram has connected the top of two poles of height 16 m (EC) and 10 m (AB) by fairy lights. The wire of the fairy lights makes an angle of 30° with the horizontal (AD). Find the answers to the following questions:

Q 1. Find length of the wire.

(1) 12 m
(2) 12.67 m
(3) 11.67 m
(4) 12.08 m

Worksheet 8.3

Marks - 25

Q 2. Find the length AD.

(1) 10.26 m
(2) 10.39 m
(3) 10.33 m
(4) 10.69 m

Q 3. Find
$cos\angle AEC$

(1) 0
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Q 4. Find
$cos\angle EAD$

(1) 1
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Q 5. Find
$tan\angle(\frac{AEC+EAD}{2})$

(1) 0
(2) $\frac{1}{2}$
(3) 1
(4) Not defined

Worksheet 8.4

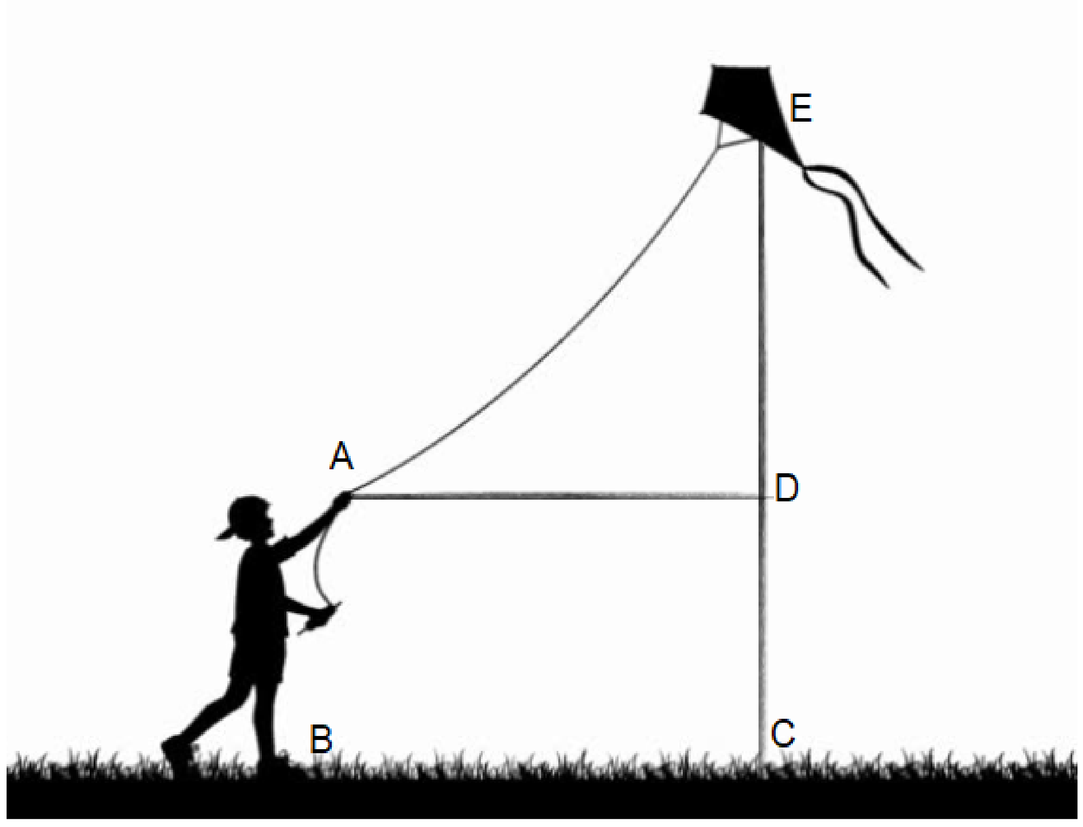
Marks - 25

Case study based questions

10th Maths

Chapter 8 Introduction to Trigonometry

Passage - 1 **5 Marks**



The Basant Panchami or popularly called the Kite Festival was celebrated with kite-flying competitions and dressing up for the day. So Rahul was flying kite on basant panchami. He is 1 m tall. Due to good wind current, the kite is flying 101 m high and casts a shadow direactly below it. The angle between the string of the kite and horizontal is 60°. Find the answers to the following questions:

Q 1. Find the length of the string.

(1) 114.96 m
(2) 115.47 m
(3) 115.42 m
(4) 114.69 m

Q 2. Find the distance between Rahul and the shadow of the kite.

(1) 57.73 m
(2) 57.89 m

(3) 52.78 m
(4) 58.66 m

Q 3. Find
$cos\angle EAD$

(1) 0
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Q 4. Find
$sin\angle AED$

(1) 1
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

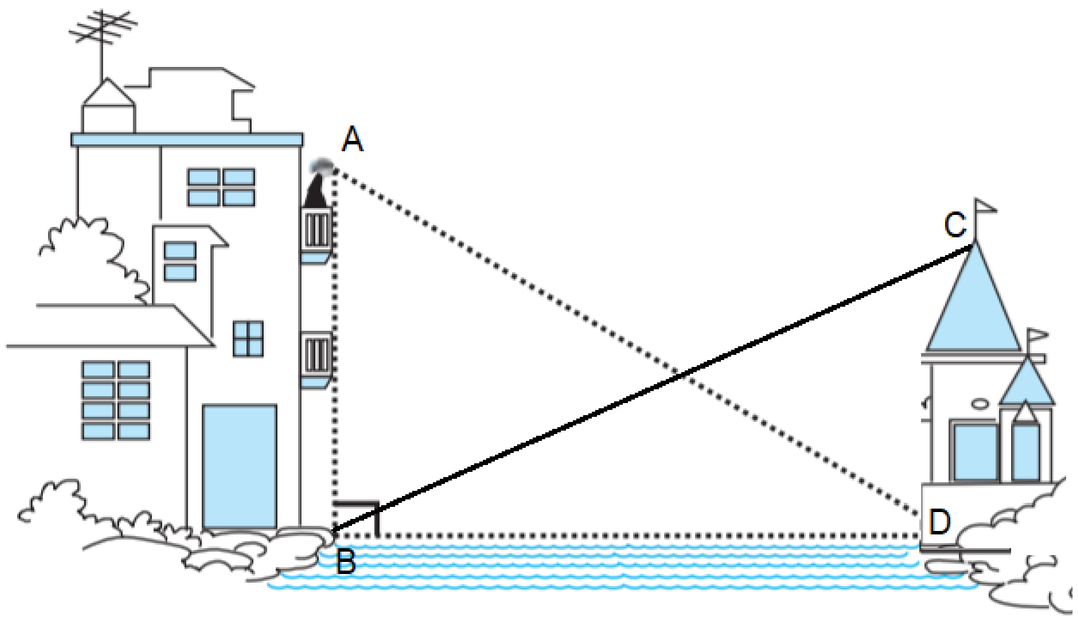
Q 5. Find
$sin^2\angle AED + cos^2\angle AED$

(1) 0
(2) -1
(3) 1
(4) Not defined

Passage - 2 **5 Marks**

Worksheet 8.4

Marks - 25



Rena is standing in her balcony. She notices that the angle of elevation of the top of a building from the foot of her house is 30° and the angle of elevation of the top of her balcony from the foot of the building is 45°. She knows that her balcony is 30 m high. Find the answers to the following questions:

Q 1. Find height of the building.

(1) 17.32 m
(2) 17.46 m
(3) 16.69 m
(4) 16.98 m

Q 2. Find
$tan\angle BAD$

(1) 0
(2) $\frac{1}{2}$
(3) 1
(4) Not defined

Q 3. Find distance between the foot of her house and the building.

(1) 15 m

(2) 28 m
(3) 29.68 m
(4) 30 m

Q 4. Find
$sin\angle BCD$

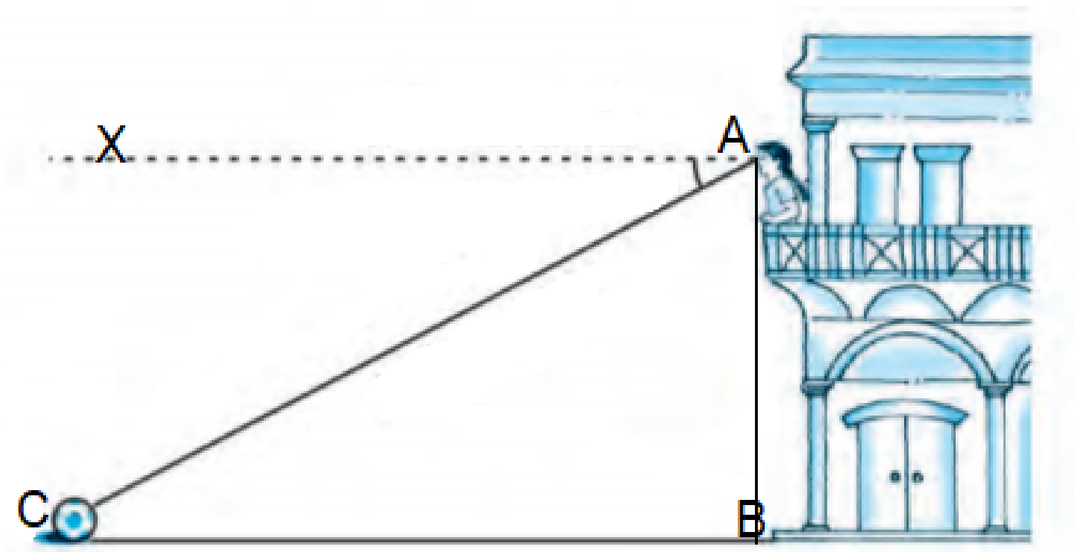
(1) 0
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Q 5. Find
$cos\angle CBD$

(1) 1
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Passage - 3

5 Marks



Anju is standing in her balcony of her house, which is at a of height 20 m. She observes the angle of depression of a ball lying on the ground as 60°. Find the answers to the following questions:

Worksheet 8.4

Marks - 25

Q 1. Find
$cos\angle CAB$

(1) 0
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Q 2. Find
$sin\angle CAX$

(1) 1
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Q 3. Find the distance between the foot of the house and the ball

(1) 11.53 m
(2) 12.33 m
(3) 11.69 m
(4) 12.05 m

Q 4. Find the length AC

(1) 22.98 m
(2) 23.15 m
(3) 22.69 m
(4) 23.09 m

Q 5. What is
$sin\angle ACB\ cos\angle CAB + sin\angle CAB\ cos\angle ACB$

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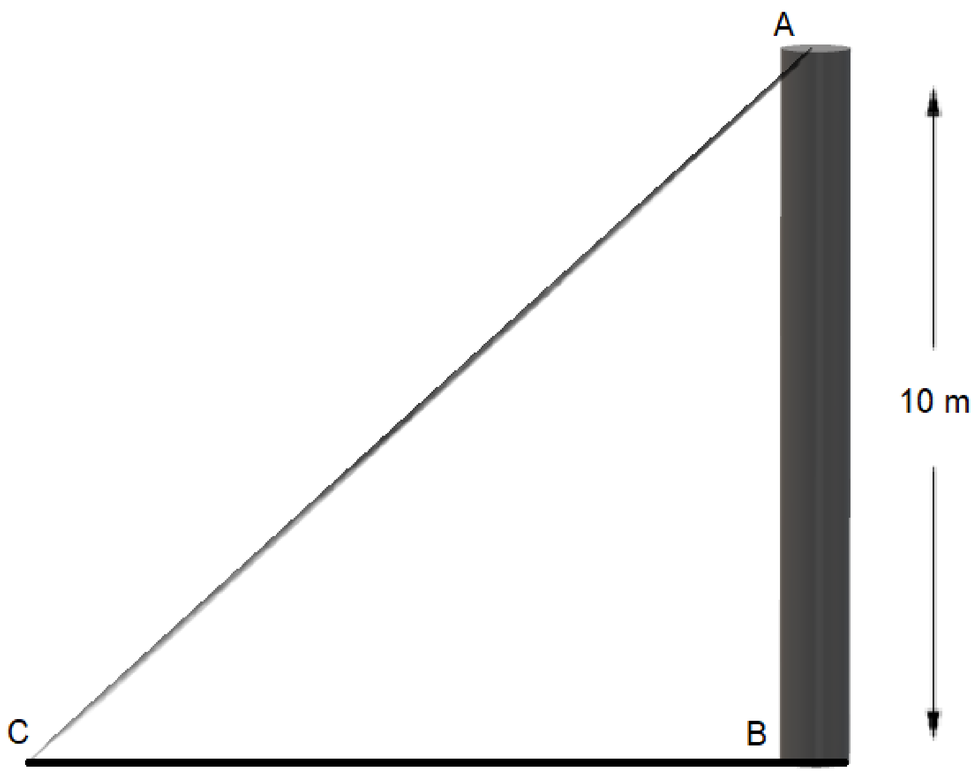
(1) 0
(2) 1
(3) $\frac{1}{2}$
(4) $\frac{3}{2}$

Passage - 4

5 Marks



An electric pole is 10 m high. Ajay has tied a steel wire to the top of the pole, and fixed it at a point on the ground to keep the pole up right. The wire makes an angle of 45o with the horizontal through the foot of the pole, Find the answers to the following questions:

Q 1. Find length of the wire AC.

(1) 12.14 m
(2) 14.14 m
(3) 14.12 m
(4) 12.12 m

Q 2. Find
$tan\angle CAB$

(1) 0

Worksheet 8.4

Marks - 25

(2) $\frac{1}{2}$
(3) 1
(4) Not defined

Q 3. Find distance between foot of the pole and the point where wire is fixed on the ground.

(1) 10 m
(2) 10.2 m
(3) 10.14 m
(4) 14.14m

Q 4. Find
$sin(90 - \angle CAB)$

(1) 0
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Q 5. Find
$cos\angle ACB$

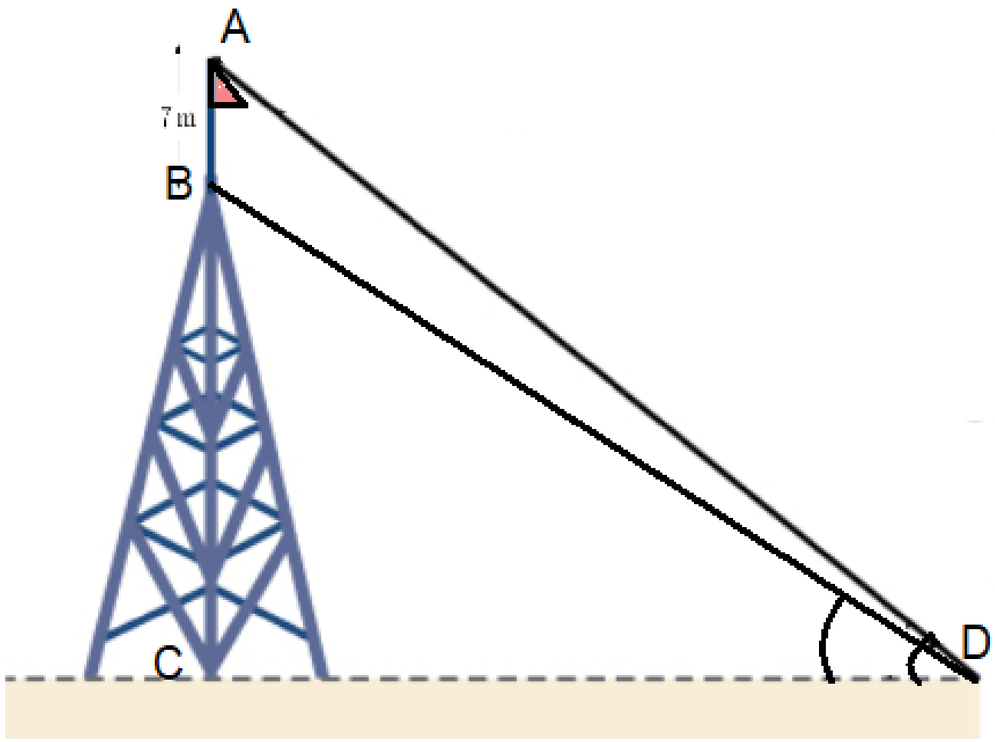
(1) 1
(2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$
(4) $\frac{\sqrt{3}}{2}$

Passage - 5

5 Marks

Worksheet 8.4

Marks - 25



Atul fixed a 7 m long flagstaff on the top of a tower standing on the horizontal plane. He noticed that from a point on the ground, the angles of elevation of the top and bottom of the flagstaff are 60o and 45o respectively. Find the answers to the following questions:

Q 1. Find height of the tower BC.

(1) 9.6 m
(2) 11.62 m
(3) 13.58 m
(4) 19.18 m

Q 2. Find the length CD.

(1) 9.6 m
(2) 11.62 m
(3) 13.58 m
(4) 19.18 m

Q 3. Find the length AD.

(1) 9.6 m

(2) 11.62 m
(3) 13.58 m
(4) 19.16 m

Q 4. Find the length BD.

(1) 9.6 m
(2) 11.62 m
(3) 13.58 m
(4) 19.18 m

Q 5. Find
$tan\angle CBD$

(1) 0
(2) $\frac{1}{2}$
(3) 1
(4) Not defined