OAKRIDGE HIGH SCHOOL

Year 10 Mathematics: Unit Assessment

Topic: Trigonometry & Right-Angled Triangles

Date: May 21, 2026

Assessment Type: Examination Script

Student Name:	Lucas Harrison	**Student ID:**	2026-99412
Class Group:	10-Maths-Beta (10M3)	**Teacher:**	Mr. R. Henderson

Notice to Assessor: This script represents un-marked student responses containing typical multi-step conceptual and computational execution errors for evaluation.

Section A: Short Answer & Applied Trigonometry

Question 1 [3 Marks]

```
Triangle has Hypotenuse = 12 cm, Angle = 34°
Looking for Opposite side.
I will use cosine for this triangle:
cos(34°) = Opposite / Hypotenuse
cos(34°) = x / 12
x = 12 * cos(34°)
x = 12 * 0.829037
x = 9.948

Answer: 9.95 cm
```

Question 2 [4 Marks]

```
Adjacent distance = 45 m, Angle of Elevation = 28°
Height of tower is the Opposite side.
tan(28°) = Opposite / Adjacent = h / 45
h = 45 * tan(28°)
Using calculator: tan(28) in Radian mode = -0.2714
h = 45 * (-0.2714) = -12.21 m
Distance cannot be negative, so ignore minus sign.

Answer: 12.21 meters
```

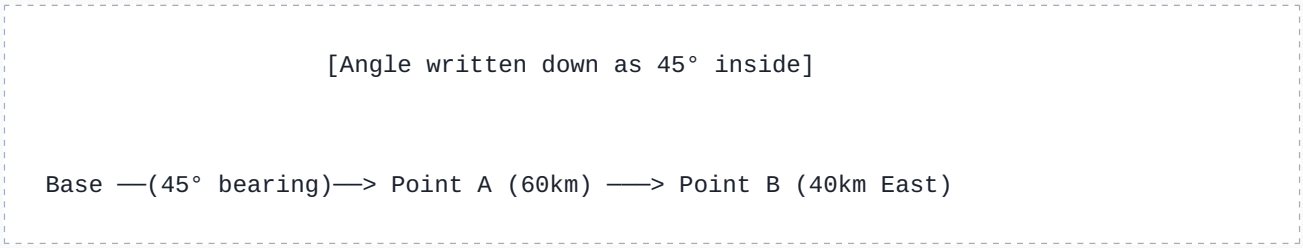
Question 3 [5 Marks]

```
Ladder length (Hypotenuse) = 8 m, Angle with ground = 75°
a) Height up the wall:
sin(75°) = height / 8
height = 8 * sin(75°) = 8 * 0.9659 = 7.73 m
Answer a): 7.73 meters

b) Distance from foot to base of wall:
Using Pythagoras: a² + b² = c²
7.73² + b² = 8²
59.75 + b² = 64
b² = 64 + 59.75 <-- combined terms incorrectly
b² = 123.75
b = √123.75 = 11.12 m

Answer b): 11.12 meters
```

Section B: Multi-Step Applications & Bearings

Question 4 [6 Marks]

a) Vector Sketch:



b) Find distance North to Point B:
Total Distance North = Leg 1 North + Leg 2 North
Leg 1 = 60 km * cos(45°) = 42.43 km
Leg 2 = flies due East for 40 km. East means it also goes standard positive direction.
Total North = 42.43 + 40 = 82.43 km

Answer b): 82.43 km

Question 5 [7 Marks]

Cliff height = 120m. Angles of depression = 22° and 35°.
Let x = distance to ship 1, y = distance to ship 2.
tan(22°) = 120 / x => x = 120 * tan(22°) = 120 * 0.4040 = 48.48 m
tan(35°) = 120 / y => y = 120 * tan(35°) = 120 * 0.7002 = 84.02 m

Distance between ships = 84.02 - 48.48 = 35.54 m

Answer: 35.54 meters