

Unit 2 Exam

| Learning Target | 2A | 2B | 2C | 2D | 2E | 2G |
|-----------------|---------|---------|---------|---------|---------|--------|
| Standard | G-GMD.4 | G-GMD.3 | G-SRT.6 | G-SRT.7 | G-SRT.8 | G-MG.3 |
| Score | | | | | | |

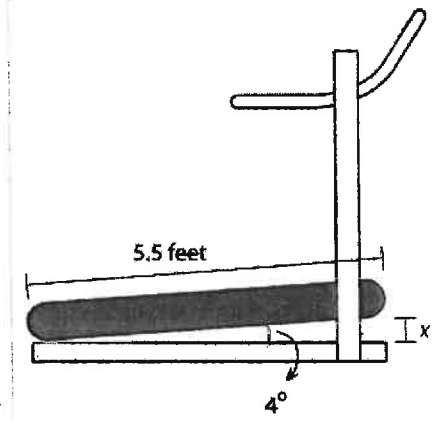
DIRECTIONS: Show ALL work, label appropriate UNITS, and write answers in COMPLETE SENTENCES.

2C ___ 1. To provide a more challenging workout, a treadmill surface that is 5.5 feet long can be raised to incline at a 4° angle. How high is the raised end of the treadmill from the platform to the nearest tenth of an inch? Set up an equation and show the steps used to find your solution. Round to the nearest **tenth** of a foot.

SOH, CAH TOA

$$\sin(4^\circ) = \frac{\text{OPP}}{\text{hyp}}$$

$$\sin(4^\circ) = \frac{x}{5.5}$$



$$x = 5.5 \cdot \sin(4^\circ)$$

$x = 0.4$ The raised end is 0.4 ft above the platform.

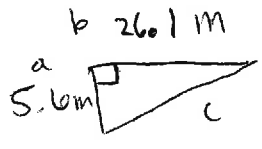
2E ___ 2. Anjali is using a Global Positioning System (GPS) device with her scouting troop during a hike through a state park. The device indicates that if they use the paved paths, the next ranger station on the hike is 26.1 meters due west and then 5.6 meters due south of their current location. The direct path to the ranger station is unpaved and also starts from their current location. What is the distance to the ranger station, to the nearest tenth of a meter, if the unpaved path is chosen? (Hint: Use the compass to draw a sketch of the situation!)

$$a^2 + b^2 = c^2$$

$$5.6^2 + 26.1^2 = c^2$$

$$\sqrt{712.57} = \sqrt{c^2}$$

$$26.7 = c$$



The distance to the ranger station is 26.7 m.

Write your answer as a decimal AND a simplified square root!

2D ___ 3. The dimensions of a beanbag toss game are given in the diagram below. At what angle, θ , is

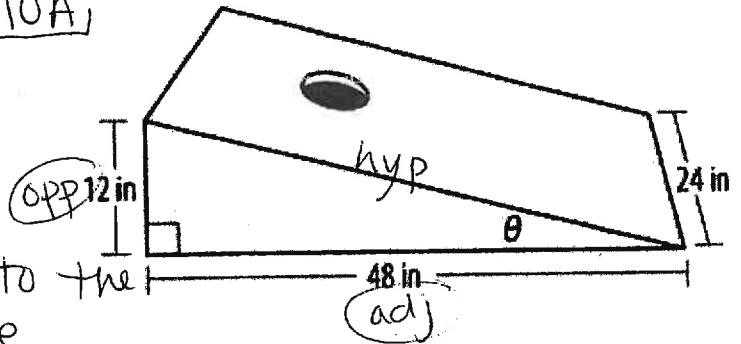
the target platform attached to the frame, to the nearest degree?

inverse trig SOH CAH TOA

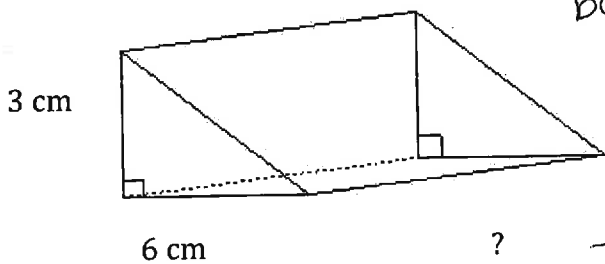
$$\tan^{-1} \frac{\text{opp}}{\text{adj}} = \tan^{-1} \frac{12}{48}$$

$$\theta = \tan^{-1} \left(\frac{12}{48} \right) \quad \theta = 14^\circ$$

The platform is attached to the frame at a 14° angle.



2B ___ 4. Ms. Shepard is going to make a toy in the shape of a triangular prism for Hamilton to play with while she is at work. The toy will hold cat treats inside that fall out throughout the day. If she wants the toy to hold 108 cm^3 of treats inside, what should the length of the toy be?



base is Δ

$$\frac{b \cdot h}{2} = \frac{3 \cdot 6}{2} = 9 \text{ cm}^2$$

$$\text{Volume} = \text{A}_{\text{base}} \times H$$

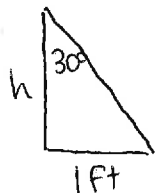
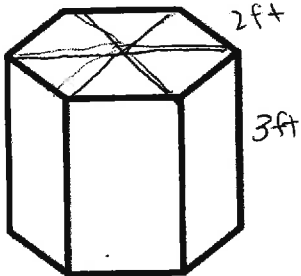
$$\frac{108 \text{ cm}^3}{9} = \frac{9 \text{ cm}^2 \cdot H}{9}$$

$$12 \text{ cm} = H$$

The length of the toy should be 12 cm.

2A ___ 5. Tajima high school is going to build a garden planter in the shape of a hexagonal prism. They 2G ___ have enough materials so that the perimeter of the lid is 12 ft and the height of the planter is 3 ft.

a. They decide to create a lid to cover the top of the planter. What would the area of the cover be?



$$\tan(30^\circ) = \frac{1}{h}$$

$$h = \frac{1}{\tan(30^\circ)}$$

$$h = 1.73 \text{ ft}$$

$$A_{\Delta} = \frac{2 \cdot 1.73}{2}$$

$$A_{\Delta} = 1.73 \text{ ft}^2$$

$$\frac{1.73 \times 6}{1} = 10.39 \text{ ft}^2$$

The area of the cover is 10.39 ft^2

2B ___ b. To make it look prettier, they decide to paint all of the surfaces of the planter. How much total paint will they need?

$$\text{TOP \& bottom} = 2(10.39) = 20.78 \text{ ft}^2$$

$$6 \text{ sides} = 6(3 \cdot 2) = 36 \text{ ft}^2$$

$$56.78 \text{ ft}^2$$

They will need 56.78 ft^2 of paint.