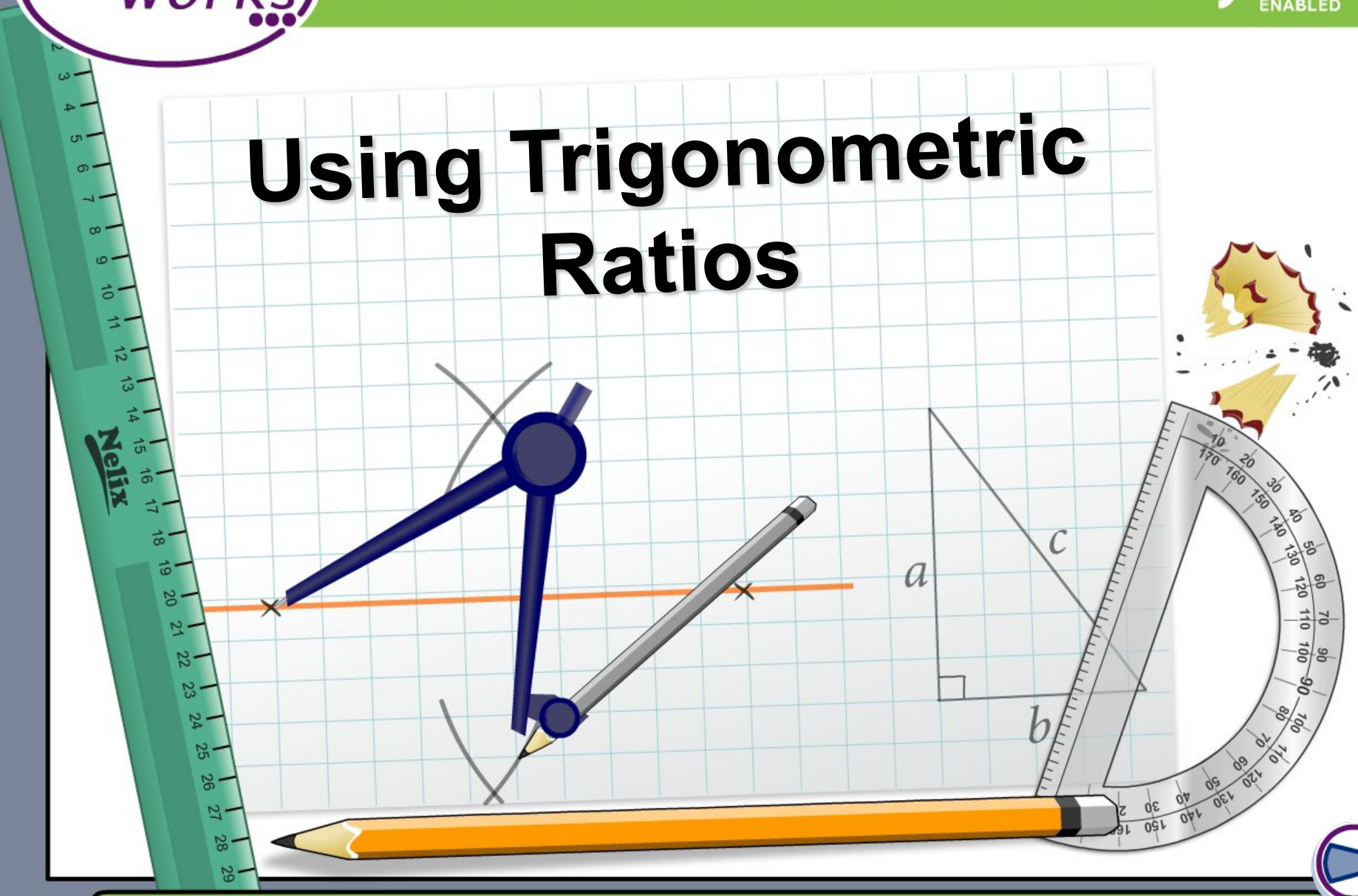
Using Trigonometric Ratios



Information

Common core icons

This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.

Slides containing examples of mathematical modeling are marked with this stamp.

This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These are:

1) Make sense of problems and persevere in solving them.

2) Reason abstractly and quantitatively.

3) Construct viable arguments and critique the reasoning of others.

4) Model with mathematics.

5) Use appropriate tools strategically.

6) Attend to precision.

7) Look for and make use of structure.

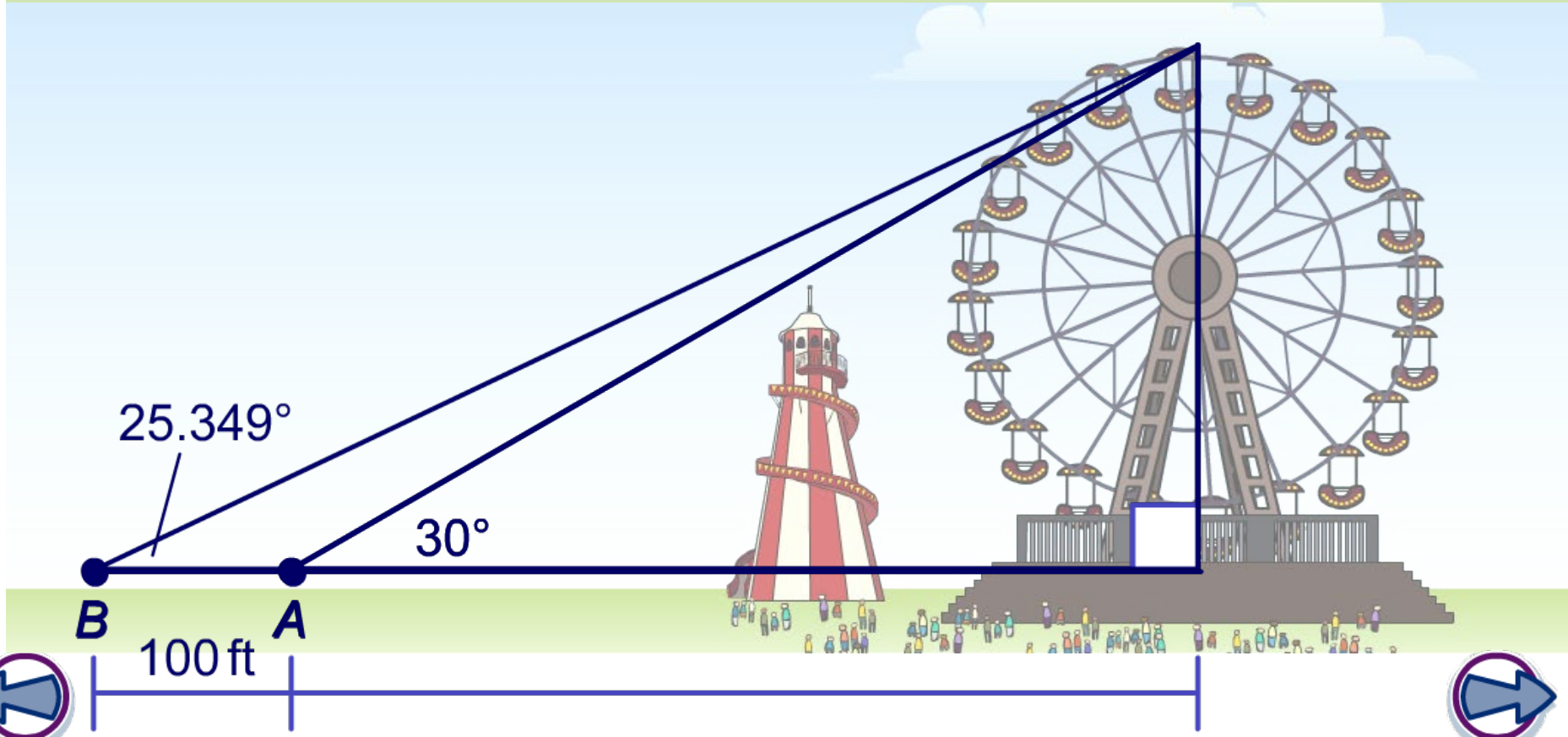
8) Look for and express regularity in repeated reasoning.

This icon indicates that the slide contains activities created in Flash. These activities are not editable.

This icon indicates teacher's notes in the Notes field.

Height of a Ferris wheel (1)

From point A, the angle of elevation to the top of the Ferris wheel is 30°. From a point B, 100 ft further away, the angle of elevation to the top of the Ferris wheel is 25.349°. Determine the height of the Ferris wheel to the nearest foot.



Height of a Ferris wheel (2)

MODELING

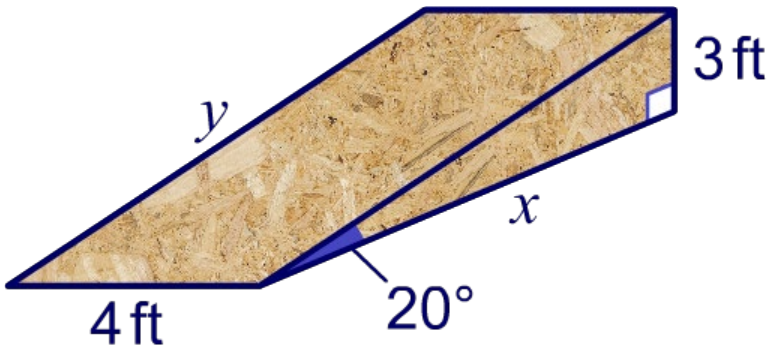
The height of an object can be measured using an inclinometer, which measures angle of elevation. To measure the height of a Ferris wheel without knowing the distance from it, two angles are measured from different locations along a line.

Press **start** to begin finding the height.

start

Skateboard ramp (1)

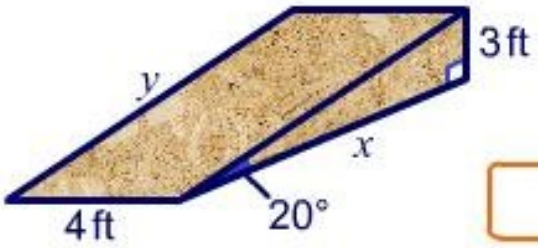
Simon wants to build a skateboard ramp to practice for competition. The ramp must have an angle of 20° with the ground. It should be 3 feet high and be 4 feet wide. It will have two triangular sides, a rectangular slope, bottom and back. How many square feet of plywood does he need to construct the ramp?



Skateboard ramp (2)

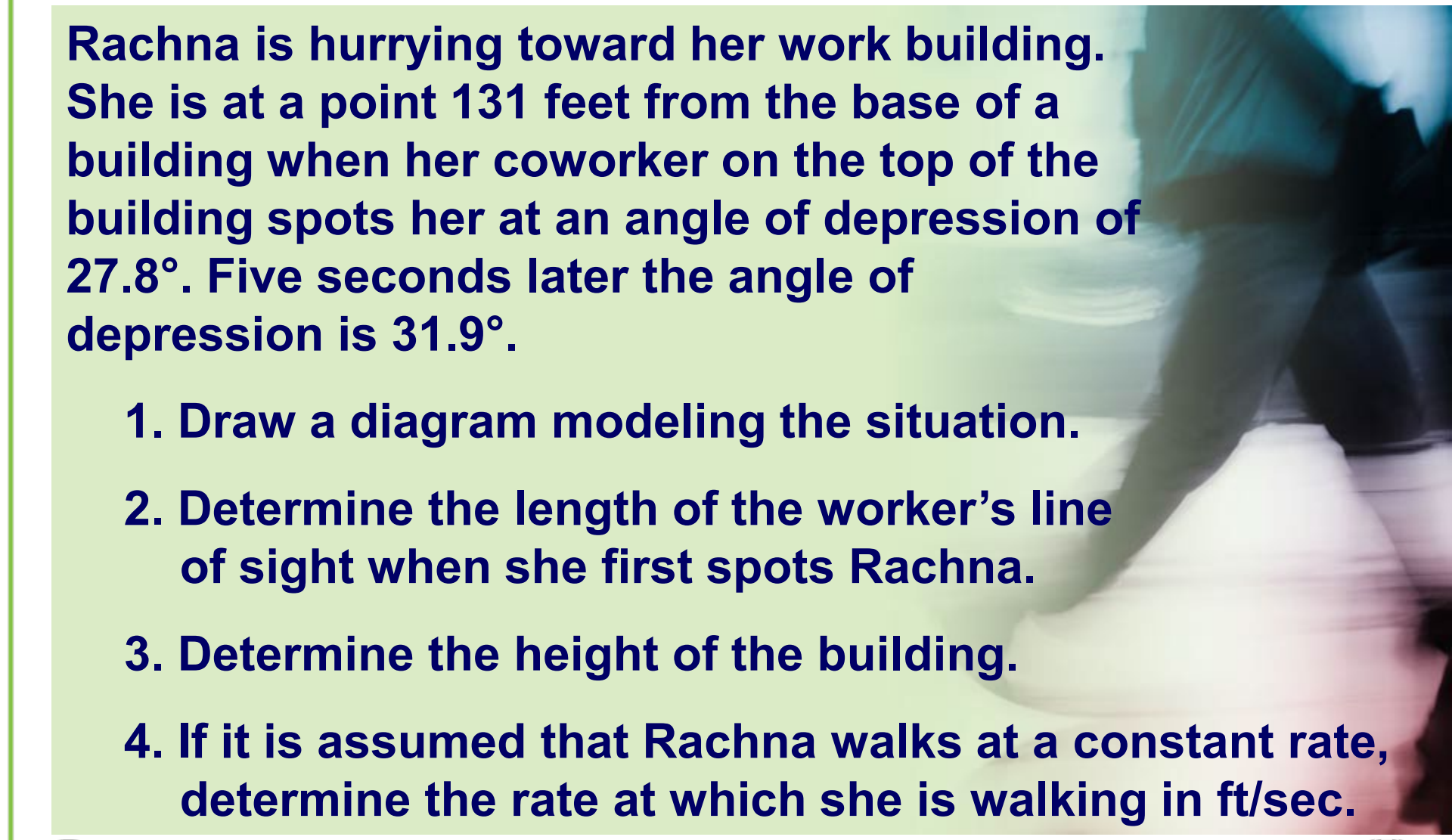
Help Simon calculate how much plywood he needs to build his skateboarding ramp.

Press **start** to begin.



start

Angle of depression (1)



Rachna is hurrying toward her work building. She is at a point 131 feet from the base of a building when her coworker on the top of the building spots her at an angle of depression of 27.8°. Five seconds later the angle of depression is 31.9°.

1. Draw a diagram modeling the situation.
2. Determine the length of the worker's line of sight when she first spots Rachna.
3. Determine the height of the building.
4. If it is assumed that Rachna walks at a constant rate, determine the rate at which she is walking in ft/sec.

Angle of depression (2)