Chapter 1 Problem Wrap-Up

Student Text Page
41

Suggested Timing
30 min

Tools
• calculators

Related Resources
BLM 1.CP.1 Chapter 1 Problem Wrap-Up Rubric

Common Errors

• Some students may have difficulty choosing the two triangles that will lead to a correct solution.

R_x Coach students through the process as required.

Summative Assessment

• Use **BLM 1.CP.1 Chapter 1 Problem Wrap-Up Rubric** to assess student achievement.

Accommodations

Language—Provide a reading buddy to read the problem aloud.

Motor—Provide additional time as required.

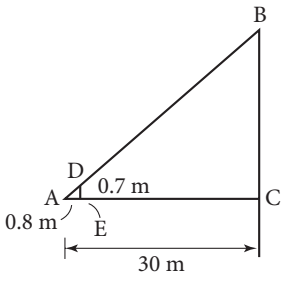
Perceptual—Provide guidance to assist students in separating the triangles from the original diagram.

Teaching Suggestions

The Chapter Problem Wrap-Up is relatively straightforward, once the correct similar triangles have been separated and labelled appropriately. The challenge for students will be in unravelling the information provided and correctly placing it on the given diagram.

Level 3 Sample Response

a)



Find the distance from the cut line to the top of the tree.

$$\frac{d}{30} = \frac{0.7}{0.8}$$
$$0.8d = 0.7(30)$$
$$d = \frac{0.7(30)}{0.8}$$
$$d = 26.25$$

The cut line is 50 cm, or 0.5 m, from the ground, so the height of the tree is $26.25 + 0.5$, or 26.75 m.

b) Since the cut line is 0.5 m from the ground, the height of the part to be felled is 26.25 m. The top of the tree should land 26.25 m from the trunk.

c) Darren could place a mirror on the ground, then move back until he can see the reflection of the top of the tree in the mirror. He could measure the vertical distance from the ground to his eye level and the horizontal distances from the tree to the mirror and from the mirror to his location. Darren could then use similar triangles to find the height of the tree.

Level 3 Notes

Look for the following:

- An effective plan carried out appropriately
- A well-organized solution
- Demonstration of considerable understanding of similar triangles and the metric measurement system
- Interpretation of the information by choosing the correct triangles and transferring the data correctly
- Accuracy in converting the units from centimetres to metres
- A correctly labelled diagram
- Several diagrams shown to separate the relevant information from the extraneous
- Effective use of mathematical terms and symbols
- An accurate conclusion to the problem stated in proper sentence form

What Distinguishes Level 2

At this level, look for the following:

- A less effective plan not necessarily carried through effectively
- Some understanding of similar triangles and some understanding of the imperial number system but errors in converting or some inaccuracies, such as not using the decimals when converting or dropping decimals inappropriately
- May choose the wrong two triangles but place data correctly on them or choose the correct triangles and misplaces the data
- May omit some labels and data on diagrams
- Use mathematical terms and symbols only somewhat effectively
- Incorrect or incomplete conclusion in point form

What Distinguishes Level 4

At this level, look for the following:

- Signs of insight into the reasoning behind the problem, such as the tree may have to be brought down in sections if they find there is no safe place/way to fell it
- Solution will follow plan and be highly organized
- Demonstrate a thorough understanding of similar triangles and the imperial number system
- Conversions may be carried to several decimal place accuracy
- Choose the correct triangles and transfer the data correctly
- Show several diagrams to separate the relevant information from the extraneous
- Label the diagrams completely and show the data on their diagrams in a highly effective manner
- Use mathematical terms and symbols in a highly effective manner
- Appropriate conclusions and further insight into the problem, for example, that the tree may have to be brought down in sections if they find there is no safe place/way to fell it and/or they may mention the need to remove the stump, etc.