Practice Assessment

Practice provides practice and allows you to self-reflect on your conceptual understanding of the *Lesson* skills. You will mark your work for *Practice* in each *Workbook* according to the following rubric.

Category	Strategy and Procedures	Response to Questions
	I have…	*I have…*
4	• used efficient and effective strategies to solve the problem(s)	• provided detailed explanations and followed directions appropriately to complete all questions
3	• used effective strategies to solve the problem(s)	• provided clear explanations and followed directions adequately to complete most questions
2	• used effective strategies inconsistently to solve the problem(s)	• provided incomplete explanations and followed some directions to complete a few questions
1	• used ineffective strategies to solve the problem(s)	• provided incomplete explanations and have not followed directions to complete some questions

Complete *Practice* exercises using your best work, showing all relevant steps needed to arrive at your solution. Refer to the *Module* to review lesson instructions. Contact your teacher for assistance or clarification as needed, or to investigate the topic further.

Check and correct your work using the solutions provided in *Appendix* in the *Module*.

Practice is worth 8 marks.

After you have assessed your work, reflect on your understanding of the concepts addressed in the *Practice* exercises in the table provided.

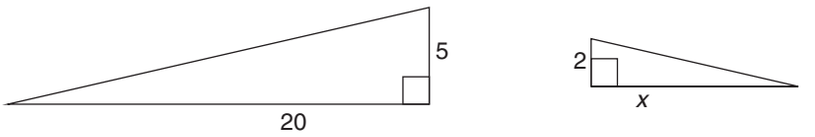
The diagrams used in this unit are not drawn to scale. Unless otherwise indicated, you are expected to determine unknown values through calculations, not by direct measurement using a ruler or protractor.

Lesson 3.1: The Tangent Ratio

Complete the *Practice* below. When you have completed all the questions for *Lesson 3.1 Practice – I* with your best work, mark your work by first comparing your answers to the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Practice – I

1. The following two triangles are similar.

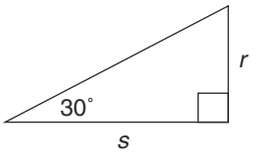


   a. Write the two pairs of corresponding side lengths.

   b. In the first triangle, the ratio of sides can be written as $\frac{20}{5} = 4$. What is the corresponding ratio for the second triangle? Explain.

   c. Solve for x.

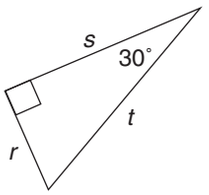
2. A triangle with sides p and q is similar to the triangle shown below, where side p corresponds to side r, and side q corresponds to side s.



a. If $\frac{p}{q} = 0.58$, what must $\frac{r}{s}$ equal?

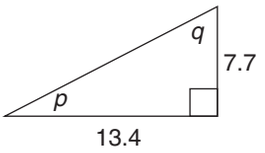
b. If $\frac{p}{q} = 0.58$, and $s = 7$, what must r equal?

3. Use the table to state a ratio of sides for the following triangle. Explain what the ratio represents.

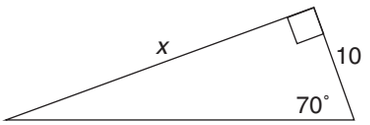


θ	$\frac{\text{length opposite } \theta}{\text{length adjacent to } \theta}$ ratio (approximate values, rounded to the nearest hundredth)
5°	0.09
10°	0.18
15°	0.27
20°	0.36
25°	0.47
30°	0.58
35°	0.70
40°	0.84
45°	1
50°	1.19
55°	1.43
60°	1.73
65°	2.14
70°	2.75
75°	3.73
80°	5.67
85°	11.43

4. Use the table to state the value of each variable.



5. Use the table to determine the unknown length, x, to the nearest tenth, in the diagram.

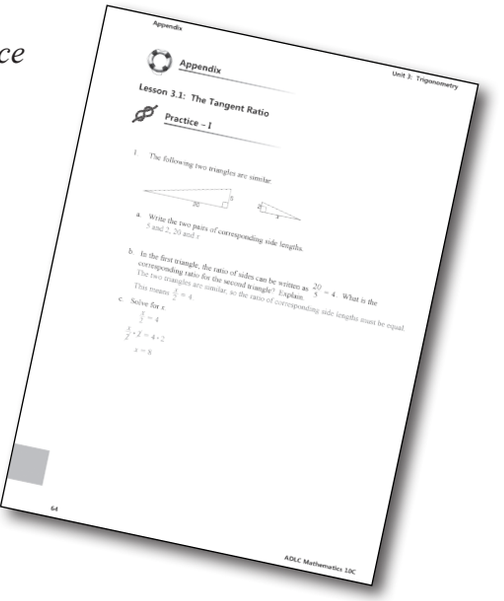


Mark your work for *Lesson 3.1 Practice – I* using the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Transfer your self-assessed mark to the front cover of the *Workbook*.

My self-assessed mark on *Lesson 3.1 Practice – I* is _____.

Reflect on your understanding of the concepts addressed in the *Practice* exercises in the table provided.


Appendix

Appendix

Unit 3: Trigonometry

Lesson 3.1: The Tangent Ratio

Practice – I

1. The following two triangles are similar.

a. Write the two pairs of corresponding side lengths.
5 and 2; 20 and x

b. In the first triangle, the ratio of sides can be written as $\frac{20}{5} = 4$. What is the corresponding ratio for the second triangle? Explain.
The two triangles are similar, so the ratio of corresponding side lengths must be equal. This means $\frac{x}{2} = 4$.

c. Solve for x.
$\frac{x}{2} = 4$
$\frac{x}{2} \cdot 2 = 4 \cdot 2$
$x = 8$

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Question Number	Got it!	Almost there…	Need to retry or ask for help.
1			
2			
3			
4			
5			

Please return to *Lesson 3.1* to continue your work in *Unit 3: Trigonometry*.

Lesson 3.1: The Tangent Ratio

Complete the *Practice* below. When you have completed all the questions for *Lesson 3.1 Practice – II* with your best work, mark your work by first comparing your answers to the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Practice – II

1. Explain the meaning of the expression $\tan 32^\circ = 0.624...$.

2. Show that two different right angles can be drawn with an acute angle of 20° and a leg length of 10 cm.

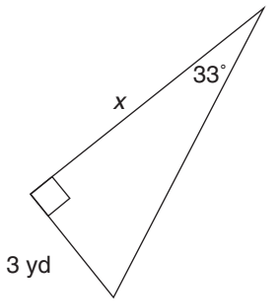
3. Use a calculator to determine the value of each of the following.

   a. $\tan 43^\circ$

   b. $\tan 17^\circ$

4. After looking at the triangle shown, Terry wrote the following solution for x.

$$\tan 33^\circ = \frac{3 \text{ yd}}{x}$$
$$x \bullet \tan 33^\circ = 3 \text{ yd}$$
$$x = \frac{3 \text{ yd}}{\tan 33^\circ}$$
$$x \doteq 4.6 \text{ yd}$$

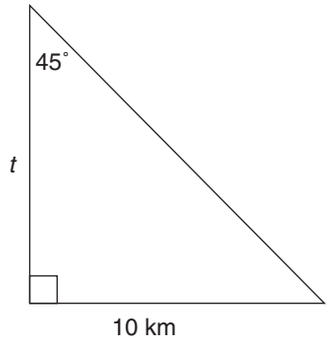


a. Explain the steps Terry used in his solution.

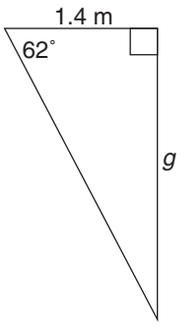
b. Explain why Terry might have chosen not to evaluate $\tan 33^\circ$ until the last step.

5. Determine the length of the unknown variable, to the nearest tenth, in each of the following diagrams.

a.

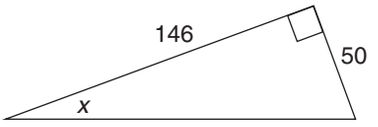


b.

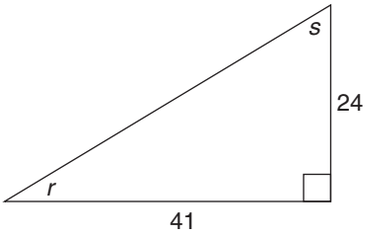


6. Determine the measure of the unknown angle(s), to the nearest degree, in each of the following diagrams.

a.



b.



7. A wire supporting a radio tower is secured to the ground 14 m from the base of the tower. If the angle between the ground and the wire is 57°, what is the height of the tower, to the nearest tenth of a metre?

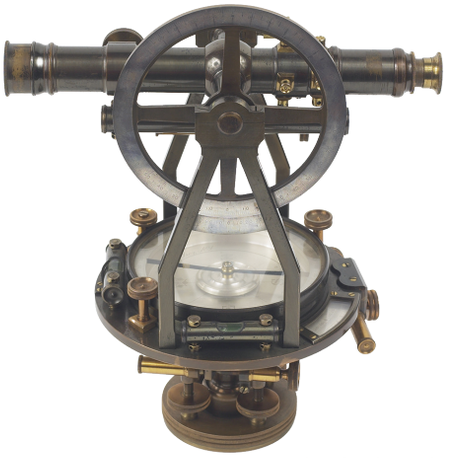
8. A transit is a tool that can be used to measure angles and is often used for surveying. A simplified version of a transit can be built using a protractor.

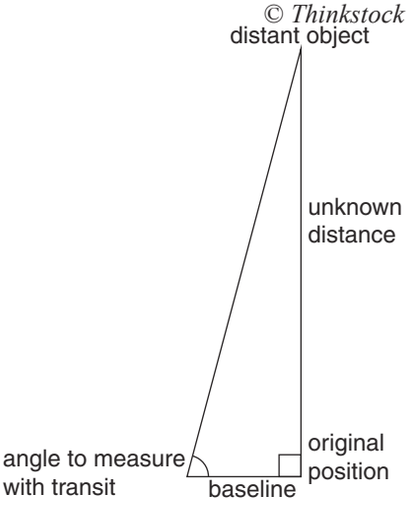
   a. Use a protractor and the diagram on p. 113 of *Mathematics 10* to build a simple transit. If you do not have the appropriate materials or if you have difficulty building the transit, contact your teacher.

   b. Your transit will be easiest to work with if you place it on a table or a stool. To determine an angle using your transit, point one of the zeros on the protractor along one leg of the angle. Next, look through the straw and aim it along the other leg of the angle. When both are lined up, you can read the angle beneath the straw on the protractor. Try measuring a couple angles with your transit.

   c. Now, you will use your transit and the tangent ratio to determine an unknown distance. Choose a moderately distant object. Mark your current location and then move in a direction perpendicular to the object to a new position. Measure the distance traveled with a measuring tape. This distance is called a 'baseline'. At your new location, use your transit to measure the angle between your original position and the distant object.

   d. Use the baseline length, the transit angle, and the tangent ratio to determine the unknown distance.





   e. Measure the unknown distance (if possible). How close was your calculation?

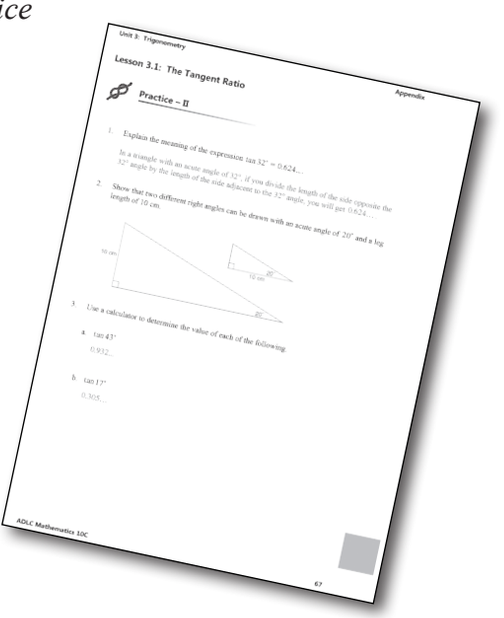
f. Suggest a way you could improve your transit or your measurement process.

Mark your work for *Lesson 3.1 Practice – II* using the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Transfer your self-assessed mark to the front cover of the *Workbook*.

My self-assessed mark on *Lesson 3.1 Practice – II* is _____.

Reflect on your understanding of the concepts addressed in the *Practice* exercises in the table provided.


Unit 3: Trigonometry

Lesson 3.1: The Tangent Ratio

Appendix

Practice – II

1. Explain the meaning of the expression $\tan 32° = 0.624...$

In a triangle with an acute angle of 32°, if you divide the length of the side opposite the 32° angle by the length of the side adjacent to the 32° angle, you will get 0.624...

2. Show that two different right angles can be drawn with an acute angle of 20° and a leg length of 10 cm.

10 cm

10 cm

3. Use a calculator to determine the value of each of the following.

a. $\tan 43°$

0.932...

b. $\tan 17°$

0.305...

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Question Number	Got it!	Almost there…	Need to retry or ask for help.
1			
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8			

You may proceed to *Explore Your Understanding Assignment* on the next page of this *Workbook*.

Note: Before you complete *Explore Your Understanding*, you may review your skills and get more practice by completing the following problems in *Mathematics 10*.

- Page 107, #1, 3a, 3b, 4a, 4b, 5, 6, 8, 9, 13

Check your work in *Enhance Your Understanding*.


Appendix

Enhance Your Understanding

Unit 3: Trigonometry

Lesson 3.1: The Tangent Ratio

Refer to page 107 in *Mathematics 10* for more practice.
• page 727, #1, 3a, 3b, 4a, 4b, 5, 6, 8, 9, 13

Question 1, page 107

a.

hypotenuse

opposite

adjacent

b.

opposite

hypotenuse

adjacent

c.

hypotenuse

opposite

adjacent

Question 3, page 108

a. $\tan 74° = 3.4874...$

$\tan 74° \doteq 3.4874$, rounded to 4 decimal places

b. $\tan 45° = 1$

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