Lesson: **5-1**

Concept/Topic: **The Pythagorean Theorem**

**General Outcome(s):** *Develop algebraic reasoning.*

**Specific Outcome(s):** *Algebra 1: Solve problems that require the manipulation and application of formulas related to the Pythagorean theorem and the primary trigonometric ratios.*

**Required Materials:** Access to smart board, unit foldable, scissors.

**Corresponding Text:** *Lesson 7.1 The Pythagorean Theorem* Pages 270–282

**Procedures**

1. Handout scissors and supplies to have students construct the unit foldable. Introduce the unit of trigonometry for right angles.
2. Using the smart board have students complete the definition of hypotenuse in their unit foldable. Tell them to label the hypotenuse in the diagram.
3. Have students copy the notes for *Pythagoras’ Theorem* into their unit foldable using your smart board fill in the blank version.
4. Using the smart board notes have students complete solutions in their unit foldable to solving triangles using Pythagoras’ Theorem.

***Possible Solution Ex #1******Possible Solution Ex #2***



1. Assign: *Drill & Practice I: Pythagoras’ Theorem.*
2. Assign: *Math Works 10 Build Your Skills* Page 278 #1–8, 11 & 12.

Lesson: **5-2**

Concept/Topic: **The Sine Ratio**

**General Outcome(s):** *Develop algebraic reasoning.*

**Specific Outcome(s):** *Algebra 1: Solve problems that require the manipulation and application of formulas related to the Pythagorean theorem and the primary trigonometric ratios.*

**Required Materials:** Access to smart board, unit foldable.

**Corresponding Text:** *Lesson 7.2 The Sine Ratio* Pages 283–292

**Procedures**

1. Using the smart board have students complete the definition of opposite in their unit foldable. Tell them to label the opposite side in the diagram.
2. Have students copy the notes for *Sine Ratio* into their unit foldable using your smart board fill in the blank version.
3. Using the smart board notes have students complete solutions in their unit foldable to solving triangles using the Sine Ratio.

***Possible Solution Ex #1******Possible Solution Ex #2***



1. Assign: *Drill & Practice II: Sine Ratio.*
2. Assign: *Math Works 10 Build Your Skills* Page 289 #1–8.

Lesson: **5-3**

Concept/Topic: **The Cosine Ratio**

**General Outcome(s):** *Develop algebraic reasoning.*

**Specific Outcome(s):** *Algebra 1: Solve problems that require the manipulation and application of formulas related to the Pythagorean theorem and the primary trigonometric ratios.*

**Required Materials:** Access to smart board, unit foldable.

**Corresponding Text:** *Lesson 7.3 The Cosine Ratio* Pages 293–300

**Procedures**

1. Using the smart board have students complete the definition of adjacent in their unit foldable. Tell them to label the adjacent side in the diagram.
2. Have students copy the notes for *Cosine Ratio* into their unit foldable using your smart board fill in the blank version.
3. Using the smart board notes have students complete solutions in their unit foldable to solving triangles using the cosine Ratio.

***Possible Solution Ex #1******Possible Solution Ex #2***



1. Assign: *Drill & Practice III: Cosine Ratio.*
2. Assign: *Math Works 10 Build Your Skills* Page 297 #1–6, 8.

Lesson: **5-4**

Concept/Topic: **The Tangent Ratio**

**General Outcome(s):** *Develop algebraic reasoning.*

**Specific Outcome(s):** *Algebra 1: Solve problems that require the manipulation and application of formulas related to the Pythagorean theorem and the primary trigonometric ratios.*

**Required Materials:** Access to smart board, unit foldable, tape measures, Handout: *Measuring Unreachable Heights*

**Corresponding Text:** *Lesson 7.4 The Tangent Ratio* Pages 301–306

**Procedures**

1. Using the smart board have students complete the remaining definitions in their unit foldable. Tell them to draw the angles of elevation to and the angle of depression from the top of the Eiffel tower to complete the diagrams.
2. Have students copy the notes for *Tangent Ratio* into their unit foldable using your smart board fill in the blank version.
3. Using the smart board notes have students complete solutions in their unit foldable to solving triangles using the Tangent Ratio.

***Possible Solution Ex #1******Possible Solution Ex #2***



1. Handout the attached activity *Measuring Unreachable Heights.* Divide your students into groups of three and have them work through the activity. Point out the marks rubric to them on the back so they know how they will be evaluated.
2. Assign: *Drill & Practice IV: Tangent Ratio.*
3. Assign: *Math Works 10 Build Your Skills* Page 305 #1–5, 7.

***Measuring Unreachable Heights*** Name(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Arrange a group of three members and collect the needed supplies:

A copy of this handout

A scientific or graphing calculator

A tape measure

An inclinometer

* 1. Choose four high objects in your school to measure the height of. Estimate the height of each object without measuring.
  2. Using the inclinometer, measure the angle of elevation to each.
  3. Without moving the inclinometer, use the tape measure to find the distance from the point of the inclinometer to the base of the object (horizontally) and record in the table.
  4. Use the tape measure at the same time to measure the height of the inclinometer off the ground (vertically) and record in the table.
  5. Repeat steps 2–4 for each of your objects.
  6. Complete the table by using the correct trig ratio to calculate the height of each object. **Show your calculations and a diagram on the back side of this page.**

*Hint:* You will need to add the height of the inclinometer off the floor to your overall height calculation.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Object** | **Estimated Height** | **Angle of Elevation** | **Distance From Inclinometer to the Base** | **Distance from Inclinometer to Floor** | **Calculated Height** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

|  |  |
| --- | --- |
| Calculations & Diagram for Object 1 | Calculations & Diagram for Object 2 |
| Calculations & Diagram for Object 3 | Calculations & Diagram for Object 4 |

|  |  |  |
| --- | --- | --- |
| **Mark Criteria** | **Mark** | **Out of** |
| □ □ □ □ Estimates are reasonable. |  | 4 |
| □ □ □ □ Diagrams are correctly drawn and measurements are correctly labelled. |  | 4 |
| □ □ □ □ □ □ □ □ Calculations are correctly completed |  | 8 |
| □ □ Neatness |  | 1 |
| □ □ □ Cooperation |  | 3 |
|  |  | **20** |

Lesson: **5-5**

Concept/Topic: **Solving for Angles in Right Triangles**

**General Outcome(s):** *Develop algebraic reasoning.*

**Specific Outcome(s):** *Algebra 1: Solve problems that require the manipulation and application of formulas related to the Pythagorean theorem and the primary trigonometric ratios.*

**Required Materials:** Access to smart board, unit foldable.

**Corresponding Text:** *Lesson 7.5 Finding Angles And Solving Right Triangles* Pages 307–319

**Procedures**

1. Using the smart board have students complete the definition of adjacent in their unit foldable. Tell them to label the adjacent side in the diagram.
2. Have students copy the notes for *Solving for Angles* into their unit foldable using your smart board fill in the blank version.
3. Using the smart board notes have students complete solutions in their unit foldable to solving triangles using the cosine Ratio.

***Possible Solution Ex #1******Possible Solution Ex #2******Possible Solution Ex #3***



***Possible Solution Ex #4******Possible Solution Ex #5***



1. Assign: *Drill & Practice V: Choosing the Right Ratio* & *Drill & Practice VI: Solving Right Triangles.*
2. Assign: *Math Works 10 Build Your Skills* Page 311 #1–8.
3. Assign: *Math Works 10 Practice Your New Skills* Page 316 #1–9, 12.