

LESSON TITLE: ANGLES (PART 1)

TOTAL TIME: TWO 60-MINUTE PERIODS

BRIEF DESCRIPTION

In this lesson, students will watch *The House That STEM Built: Angles* video. This video will introduce five different types of angles: acute, right, obtuse, straight, and reflex. The video highlights and demonstrates areas where these angles exist within a home. The first lesson is followed by an exit slip which can be used as a formative assessment tool.

In the second lesson, students will participate in an angle scavenger hunt where they will be responsible for finding their own angles.

CURRICULUM OUTCOMES

Taken from the New Brunswick Geometry, Measurement, and Finance 10 curriculum.

GENERAL CURRICULUM OUTCOMES

Develop spatial sense.

SPECIFIC CURRICULUM OUTCOMES

G5: Demonstrate an understanding of angles, including acute, right, obtuse, straight, and reflex, by: drawing, replicating, and constructing, bisecting, and solving problems.

NEW BRUNSWICK GLOBAL COMPETENCIES ACHIEVED¹

- Critical Thinking and Problem-Solving
 - Learners see patterns, make connections, and transfer their learning from one situation to another, including real-world applications.
 - Learners construct, relate and apply knowledge to all domains of life, such as school, home, work, friends, and community.

LEARNING OBJECTIVES

The learner will be able to

- identify the five main types of angles: acute, right, obtuse, straight, and reflex.
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MATERIALS

- Loose leaf paper.
 - Pencil or pen.
 - Chart paper (optional).
 - “Angles Exit Slip” handout.
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¹ https://www2.gnb.ca/content/dam/gnb/Departments/ed/pdf/K12/curric/competencies/NBCompetencies.pdf?fbclid=IwAR1ldrZs1gFgiNm8rC4oz7Fmx6mSn-6t_QJkenev0eD33rZ-foYYn6bmdmc also available at <https://tinyurl.com/nb-competencies>

BEFORE CLASS

Print out one copy of “Angles Exit Slip” for each student.

WARM-UP: 15 MINUTES

To start this lesson, students will complete a think–pair–share to get their minds thinking about angles and construction.

- Write the following questions on the board.
 - Where do you think angles are used in construction?
 - Where do you see angles in a house?
- Give students **5 minutes** to write down their responses to the two questions. This will be the **think** component.
- After students have finished completing their responses, assign students in groups of 2.
 - The teacher can put the students in groups or the teacher may allow the students to choose their own partner. This decision is up to the teacher.
- Once students are in groups of 2, give them **5 minutes** to share their answers with each other. While they are sharing, they must come up with the top answer for each question that they would like to share with the class. This will be the **pair** component.
- After the students have shared their responses in groups of two and have their top answers, the teacher will ask each group to share with the whole class their top answers. This will be the **share** component.
- While the students are sharing, the teacher will be writing out the answers on the whiteboard or a piece of chart paper for the class to refer back to. This activity should last approximately **5 minutes**.
 - Alternative: If students are able to use technology in the classroom, a Jamboard could be used for students to post their answers for the class to see. The Jamboard can then be saved for future use.

ACTIVITY: 35 MINUTES

Watch The House That STEM Built video. Feel free to pause the video and ask some or all of the following open-ended questions to prompt discussions.

- 1:08 – Have the students copy in their notes the definition of an acute angle. Make sure that students are also drawing the picture.
- 1:13 – Have students copy in their notes the definition and drawing of a right angle.
- 1:20 – Have students copy in their notes the definition and drawing of a right angle.
- 1:25 – Have students copy in their notes the definition and drawing of a straight angle.
- 1:32 – Have students copy in their notes the definition and drawing of a reflex angle.
- 1:54 – Have students try to identify an example of any right or straight angles on the outside of the house. Ask students to raise their hands and share with the class when they have spotted an example of either angle. This activity should last approximately **5 minutes**.
- 2:10 – Have students try to identify an example of obtuse or acute angles on the roof. Ask students to raise their hands and share with the class when they have spotted an example of either angle. This activity should last approximately **5 minutes**.
- 2:39 – Have students try to identify any reflex or obtuse angles in the kitchen area of the house. Ask students to raise their hands and share with the class when they have an example of either angle. This activity should last approximately **5 minutes**.
- 3:10 – Have students try to identify an example of any angles in the ceiling. Ask students to raise their hands and share with the class when they have an example. This activity should last approximately **5 minutes**.
- There are 4 angles identified in the video.

- 5:19 – Have students think of answers to the question in the video, “Where else are you able to find angles outside of the classroom?” Ask students to raise their hands and share the ideas they come up with. This activity should last approximately **5 minutes**.

CONCLUSION: 10 MINUTES

The teacher will explain the exit slip that students will complete. Exit slip details:

- The students will watch the Angles video again all the way through without any pauses.
- While students are watching the video, they must identify 5 different angles that were not clearly shown in the video. The students will record the approximate time on the video they saw the angle and record the angle type.
 - For example, at 2:30, the video shows the unfinished kitchen cabinets. The cabinets have a straight angle (180 degrees).
 - Another example, at 2:44, there is a picture hanging on the wall in the background. The picture has a 90-degree (right) angle.
- Students will hand in their sheet at the end of class as an exit slip. The teacher will use the exit slips as a formative assessment tool.
- Students can refer to the notes that they took at the beginning of the video to help identify different angles.

The teacher will hand out the “Angles Exit Slip” handout.

The teacher will play the video again without any pauses.

The teacher will collect all exit slips at the end of class.

DIFFERENTIATION

CONTENT

Use *The House That STEM Built* video to discuss other examples where we see angles in our everyday lives. For example, the hands on a clock, tables, and patterns on clothes.

PRACTICE

Some students may struggle to draw the angles when taking the notes. Therefore, the teacher can provide a template that already has the angles drawn. The student can then write the definition beside the matching angle.

PRODUCT

Some students may struggle to find different examples of all five angles. The teacher can choose whether students are responsible for finding an example of each angle for the exit slip. Or, maybe the student is responsible for finding 5 examples of right angles only or straight angles only, etc.

EXTENSION

The teacher can have another think-pair-share activity with the examples that the students found while completing their exit slips. Similar to the warm-up activity, once students have finished their exit slips, have students go in groups of two. Once students are in groups of two, they can share with their partners the examples they found in the video. After students have shared with their partners, they can share with the whole class.

ANGLES EXIT SLIP

Name: _____ Class: _____ Date: _____

DIRECTIONS

- While watching the video without any pauses, identify 5 different angles that were not specifically shown.
- Record the approximate time in the video that you discovered the angle and the type of angle. Remember,
 - an acute angle is less than 90 degrees,
 - a right angle is equal to 90 degrees,
 - an obtuse angle is greater than 90 degrees and less than 180 degrees,
 - a straight angle is equal to 180 degrees, and
 - a reflex angle is greater than 180 degrees.

LESSON TITLE: ANGLES (PART 2)

TOTAL TIME: TWO 60-MINUTE PERIODS

BRIEF DESCRIPTION

In this second lesson associated with *The House That STEM Built: Area* video, students will be completing an angle scavenger hunt. Students will be given a set of boundaries within the school and their task is to find two examples of the following angles: acute, right, obtuse, straight, and reflex. Students will complete a handout that will be submitted to the teacher. The teacher can decide whether this activity is used for marks or as a formative assessment tool.

CURRICULUM OUTCOMES

Taken from the New Brunswick Geometry, Measurement, and Finance 10 curriculum.

GENERAL CURRICULUM OUTCOMES

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SPECIFIC CURRICULUM OUTCOMES

G5: Demonstrate an understanding of angles, including acute, right, obtuse, straight, and reflex, by: drawing, replicating, and constructing, bisecting, and solving problems.

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- Critical Thinking and Problem-Solving
 - Learners see patterns, make connections, and transfer their learning from one situation to another, including real-world

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applications.

- Learners construct, relate and apply knowledge to all domains of life, such as school, home, work, friends, and community.

LEARNING OBJECTIVES

The learner will be able to

- Identify five main types of angles: acute, right, obtuse, straight, and reflex.
 - Correctly measure the angle using a protractor
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MATERIALS

- Loose leaf paper.
 - Pencil/Pen.
 - Scavenger hunt handout.
 - Protractor.
 - Personal device for photos.
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BEFORE CLASS

Print out one copy of *Angles Scavenger Hunt* for each student.

WARM-UP: 15 MINUTES

Show students the full *The House That STEM Built: Angles* video without any pauses. This will be the third time they have viewed the video. Ask students if there are any questions about the five angles discussed in the video (acute, right, obtuse, straight, and reflex). Pass out the handout titled Angle Scavenger Hunt. This handout outlines the directions for the scavenger hunt so all students will be able to have the directions in front of them the whole time. Explain the directions for the scavenger hunt.

- The teacher will create and share the boundaries that the students can explore.
 - The boundaries could include only the classroom, the whole school, or outside. The decision is up to the teacher.
- Within the set boundaries, the students will explore and look for two examples of the following angles, acute, right, obtuse, straight, and reflex.
- The students will use a protractor to measure the angle they found. If it is not possible to directly measure the angle because of where it is located, students can measure the angle on the picture that is taken afterwards.
- The students will take a picture of the angle they are measuring.
- The students will upload the angle to Microsoft Teams or the preferred platform used by the school.
- This activity can be done individually or in groups. This decision is up to the teacher.

Show students the exemplar scavenger hunt that is attached to this document.

ACTIVITY: 40 MINUTES

Before students are sent off to explore their boundaries and find their angles, the teacher should play the following video from YouTube: https://www.youtube.com/watch?v=Gzd_lsNwTOI also available at <https://tinyurl.com/protractor-video>.

- This video demonstrates how to properly use a protractor.
- Each student (or each group) will need a protractor.

The teacher should give the students a set time to return to the classroom (if their boundaries are outside of the classroom). While students are working, the teacher should be circulating the boundaries that were given to ensure that students are staying on task and working quietly.

CONCLUSION: 5 MINUTES

Once students have returned to the classroom, ask students to share an example that they found for acute, right, obtuse, straight, and reflex angles. Collect all of the *Angle Scavenger Hunt* worksheets.

DIFFERENTIATION

CONTENT

The teacher can decide if finding two examples for each angle on the scavenger hunt is too many or not enough. The teacher can adjust the number of angles to be found.

PRACTICE

Some students can be assigned different boundaries. For example, one group of students is responsible for finding angles in the classroom while another group is responsible for finding angles in the gym, etc.

PRODUCT

Some students may struggle with identifying angles in their environment. If there are students who may struggle, the teacher can draw angles on a worksheet and have the student identify using a protractor what the angle is.

EXTENSION

Now that students have practiced finding and identifying angles in a room, have the students create their own angles that represent acute, right, obtuse, straight, and reflex.

ANGLES SCAVENGER HUNT

Name: _____ Class: _____ Date: _____

DIRECTIONS

- Explore the boundaries outlined by the teacher.
- While exploring, identify, measure, and photograph two different examples of the following angles:
 - acute,
 - right,
 - obtuse,
 - straight, and
 - reflex.
- Use your protractor to measure the angle that you have found.

PLEASE SHOW ALL WORK:

ANGLES SCAVENGER HUNT EXEMPLAR

Name: _____ Class: _____ Date: _____

DIRECTIONS

- Explore the boundaries outlined by the teacher.
- While exploring, identify, measure, and photograph two different examples of the following angles:
 - acute,
 - right,
 - obtuse,
 - straight, and
 - reflex.
- Use your protractor to measure the angle that you have found.

EXAMPLES OF ACUTE ANGLES



EXAMPLES OF RIGHT ANGLES

