EasyCode Sample Lessons: Grades 3-8

Turn Around: Challenges 6 - 10

In this lesson, students will continue to explore the EasyCode platform by completing five more challenges. Prior to class, use the teacher dashboard to make sure all of your students have completed the first five challenges with three stars. *(Estimated Time: 45 minutes)*

Primary Objectives

- Students will identify the different ways to use "turn" instructions.
- Students will complete challenges 6-10 on EasyCode.
- Students will learn to use "turn" using degrees.
- Students will learn use "step" for backwards movement.
- Students will learn what a program, function, argument, statement and object are and how to they relate to coding.

Warm-up (29 minutes)

Review - 5 minutes

Start with a brief discussion with the class of what was learned in the previous lesson:
- What is coding?
- What instructions have we used so far? (step, turn)
- What is a programming language and which one do we use in EasyCode? (CoffeeScript)

Activity - 8 minutes

Ask for three volunteers, giving each of them a role: one is the *Programmer*, one is the *Computer*, and the third is the *Character*. Now ask the *Programmer* to instruct the *Computer* to lead the *Character* to an object you placed in the classroom. Make sure the students use instructions properly (step with a number, turn left or turn right). As they go, write the instructions on the board to remind the other students of what they have learned.

Repeat this activity with another group of three volunteers.

Ask the students, "Why do you need both a computer and a character? Why can't one person be both?"

If we compare programming to the human body, then the programmer is the brain that sends instructions to the different parts of the body. The computer is responsible for making sure that the different parts of the body (the *Characters*) execute the instructions exactly as instructed.

Discussion: Statements, Objects, Functions and Arguments - 7 minutes

Introduce your students to the term *statement*: an element which expresses some action to be carried out. A computer program is a set of instructions which are simple tasks provided to the computer. These instructions are

called statements. The instructions the *Programmer* gave earlier to the *Computer* are statements. Statements can be anything from a simple line of code to a complex set of conditions and formulas.

- Ask the class to give you an example for a statement and write it on the whiteboard. Some examples might be: step 10, step 15, turn right, turn left

Objects are everything in the scene we can interact with, like the bush, bridge, banana, and turtle.

Each object has a set of actions it can do, like step or turn for the monkey. These actions are called *functions*, and the input we add to them is called an *argument*. For example in turn 10, the argument is 10.

- Ask what is the function in this statement (step or turn)
- Ask what is the argument (10, 15, right or left)

Discussion: Turning with Degrees - 5 minutes

This lesson is about turning and walking backwards. There are three ways to make a character turn. The first is to use turn right or turn left like we learned in the first lesson. In this lesson, we are introducing another way to turn.

Instead of turning right or left, we can turn by degrees. If your students have basic knowledge of degrees, such as a 360 degree turn or a 90 degree turn, then make a quick review of that knowledge. Otherwise, provide a short introduction to degrees. Optionally use a protractor.

Check your students' understanding of turning with degrees: Ask all of them to stand up and instruct them to turn 90, turn 120, and turn 360.

Repeat the explanation of turning by degrees: turn followed by a number turns the monkey by that number of degrees. For example, turn 90 turns the monkey the same as turn left.

Discussion: Walking Backwards - 4 minutes

Understanding the concept of walking backwards is pretty easy. If we want to go forward 15 steps, we type step 15, and if we want to go backwards, we type step -15. -15 will be read by the computer in this context as 15 steps backwards. If appropriate for level of your students, this may be a good opportunity to talk about negative numbers on the number line.

Check your students' understanding of walking backwards: Stand with your back to the door and ask, "If I were the monkey what would be the right instruction to get me to the door?". Emphasize that it should be one instruction, and not involve turning. Make sure their answer includes step -(some value).

Repeat the explanation of stepping backwards: to step backwards a number of steps, add the minus sign (-) before the number. (*For example: step -10.*) The computer reads -10 in this context just like "10 steps backwards".

Activity (16 minutes)

Walk-through - 5 minutes

Click the EasyCode button to go to your EasyCode account.

Open challenge #7 and show the animation about angles. Use the ruler to measure the distance between the monkey and the banana, and show that ruler is also a protractor: it shows the number 45 which is the angle the monkey has to turn in order to face the banana.

Show that this is the same number in the code. Make sure your students understand how to use the ruler as a protractor.

In level 8, the students can use either turn left or turn 90 to get three stars. Some of your students will probably use turn left. Make sure to emphasize that they can also use turn 90 for the same result.

Open the challenge map and show your students the skill mode tab. Explain that in skill mode students can play through more challenges to perfect their coding skills.

These extra challenges are great practice and they only unlock after we complete certain challenges. Hover over a locked challenge to show the unlocking tip. The first skill challenges will open for your students after they complete challenge 6.

Let students know that if they finish early, they can go to skill mode and complete unlocked challenges.

Access EasyCode - 1 minute

Ask the students to:

1. Log in to Learning.com.
2. Go to the Turn Around assignment.
3. Click the EasyCode button.

If a student is having trouble remembering his or her login information, use your **Learning.com** roster or provide students with log in cards.

Play time - 10 minutes

All students should complete challenges 6-10 with at least two stars. Use the teacher dashboard to keep track of students' achievements. Keep in mind that students might find turning with degrees difficult. You may need to provide extra help in levels 7 and 8. Challenge #10 is an assessment challenge that covers everything your students recently learned in EasyCode.
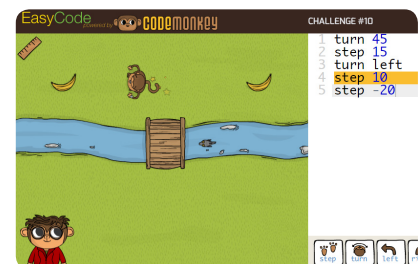
Assignment (5 minutes)

Ask your students to pick a new location at the school and write new instructions for going from the classroom to that location without using degrees instead of right or left.

Part 1

1. Click the button below to goto to EasyCode and complete challenges 6 to 10.
2. Try to get 3 stars on challenges 6 to 10 if you have not already.
3. If you have extra time, complete as many of the skill challenges as you can from the Skill Mode tab, trying to get 3 stars on each.

Part 2

1. Choose another location other than your classroom in your school (gym, library, cafeteria, etc.)
2. In the space below and using only code you used today, create directions from your classroom to the other place using degrees instead of right or left.

    - Start by leaving blanks for the number of steps.
    - When instructed by your teacher, figure out exactly how many steps you need and add them to your directions.
    - Save your directions.

3. Turn in your assignment.