Name:	Date:	Class:	

Get in Gear Post-Activity Quiz Answer Key

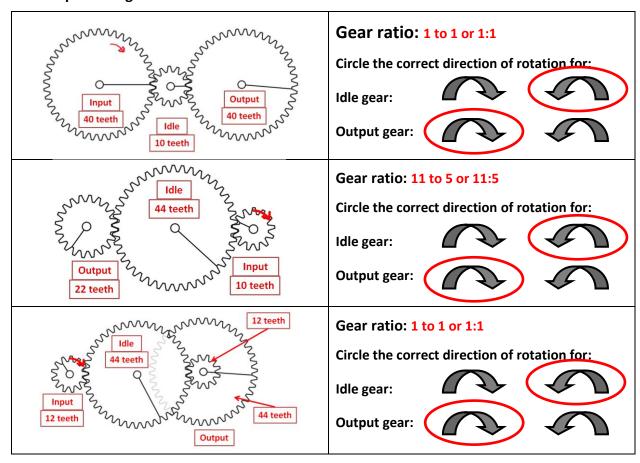
1. Define the following words.

Speed: A measure of how fast an object is moving. The rate of change of distance with respect to time.

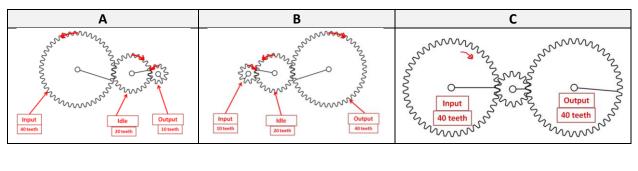
Torque: A measure of how hard something is twisted. A twisting force.

Gear train: Two or more gears connected together.

2. Compute the gear ratios illustrated below:



3. In the gear assembly diagrams below, which one produces torque? B Which one produces speed? A Which one is neutral? C (write the correct letter)



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4. As an engineer, you want to design a racing car, but you only have gears with 8, 24 and 72 teeth. The maximum power speed the LEGO EV3 motor can delivered is 100 and you want your robot to move at a power speed of 300.

Note: This problem tests the understanding of gear assemblies to obtain high speed.

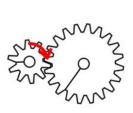
- A. What gear ratio do you need for the robot transmission? 3 to 1
- B. Which gears can you choose for the transmission?

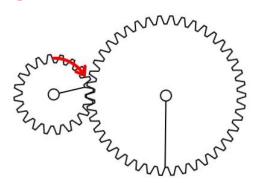
Input: Output:

8 24

24 72

- C. How do you arrange the gears in the gear train? Draw a picture to illustrate.
 - 2 possible answers; the arrow is the input





5. As an engineer, you want to build a powerful bulldozer robot. Using the standard EV3 motor, you can only push a half-pound object. Available are gears with 8, 24 and 72 teeth. You want to build a transmission with a high torque that can push a 4.5-lb object.

Note: This problem tests the understanding of gear assemblies to obtain high torque.

A. What gears ratio do you need for the robot transmission?

1 to 9

B. Which gears do you choose for the transmission?

Inpu 72 Idle (optional): 24

Output:

- C. How do you arrange the gears in the gear train? Draw a picture to illustrate.
 - 2 possible answers; the arrow is the input

