

## Unit 3: Logic and Reasoning Lesson 3.3



### Game On!

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1. For each of the following arguments, explain whether correct reasoning is used.

a. Hanooh is rich because he doesn't pay taxes and he doesn't pay taxes because he is rich.

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b. All mammals have a backbone and species A has a backbone, so it must be a mammal.

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c. All mammals are warm blooded and species A is a mammal so species A is warm blooded.

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d. Peter said an election will be called this spring, but he is a liar so there will be no election.

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2. Fadi is learning to simplify fractions. She writes the following.

$$\frac{\cancel{6}4}{\cancel{1}6} = \frac{4}{1} = 4$$

She asks her dad if  $\frac{64}{16} = 4$  and her dad says yes. Fadi believes she has mastered simplifying fractions.

- a. Is Fadi's approach reasonable? Explain.

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- b. Suppose you try to correct Fadi. What could you tell her if she argues that her method produces the correct answer and therefore she must be correct.

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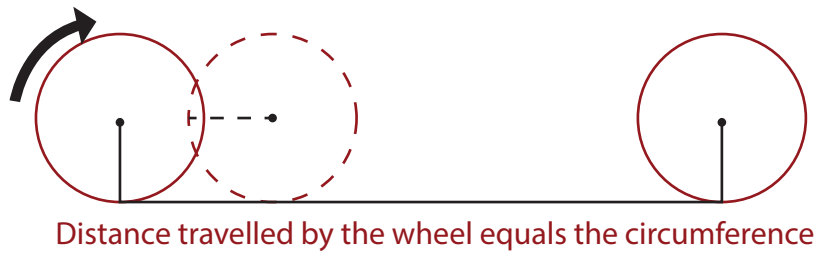
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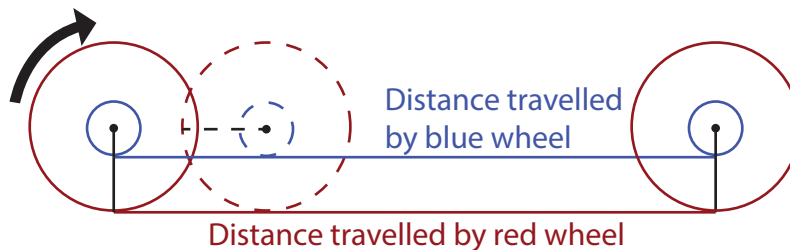
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3. Consider the following proof that different circles have the same circumference..

*Suppose a wheel is rolled for exactly one rotation. The distance travelled is equal to the circumference of the wheel.*



*Now suppose two wheels of different sizes are joined with a common axle as shown. The two wheels are rolled for one rotation as shown in the diagram.*



*The two lines traced by the bottom of the wheels are the same length so both circles must have the same circumference.*

Explain why the argument is not reasonable.

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- 3 4. Complete the following table if each row, column, and diagonal must add to 15.

4	9	
	1	

- 2 5. Kali says "My older brother is younger than I am."
- a. Explain why Kali's statement appears contradictory.
- b. Describe a scenario where Kali's statement is actually true.

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You have completed *Lesson 3.3 Game On!*. Please proceed to the *Unit 3: Logic and Reasoning Time Out*, on the next page of this *Workbook*.