**Lesson 4 Reteach**

***Proportional and Nonproportional Relationships***

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| Two related quantities are **proportional** if they have a constant ratio between them. If two related quantities do not have a constant ratio, then they are **nonproportional.** **(proportional = same ratio; nonproportional = not same)** |

**Example 1**

**The cost of one CD at a record store is $12. Create a table to show the total cost for different numbers of CDs. Is the total cost proportional to the number of CDs purchased?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Number of CDs** | 1 | 2 | 3 | 4 |
| **Total Cost** | $12 | $24 | $36 | $48 |

$\frac{Total Cost }{Number of CDs} =\frac{12}{1} =\frac{24}{2} =\frac{36}{3} =\frac{48}{4}$ = $12 per CD Divide the **total cost** for each **by the number of CDs** to find a ratio. **Compare** the ratios. ***Are they the same??***

Since the ratios **are the same**, the total cost is proportional to the number of CDs purchased.

**Example 2**

**The cost to rent a lane at a bowling alley is $9 per hour plus $4 for shoe rental. Create a table to show the total cost for each hour a bowling lane is rented if one person rents shoes. Is the total cost proportional to the number of hours rented?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Number of Hours** | 1 | 2 | 3 | 4 |
| **Total Cost** | $13 | $22 | $31 | $40 |

$\frac{Total Cost}{Number of Hourse} \rightarrow \frac{13}{1} $or 13 $\frac{22}{2}$ or 11 $\frac{31}{3}$ or 10.34 $\frac{40}{4}$ or 10 Divide **each cost** by the number of hours.

Since the ratios **are not the same**, the total cost is nonproportional to the number of hours rented with shoes.

**Exercises**

 **1. PICTURES** A photo developer charges $0.25 per photo developed. Is the total cost proportional to the number of photos developed?

 **2. SOCCER** A soccer club has 15 players for every team, with the exception of two teams that have 16 players each. Is the number of players proportional to the number of teams?