

L1 Relations

Wednesday, October 19, 2022 8:36 AM



L1 Relations

Pre-Calculus 10 Enriched Relations & Functions

Lesson 1 Relations

Set: a collection of distinct objects

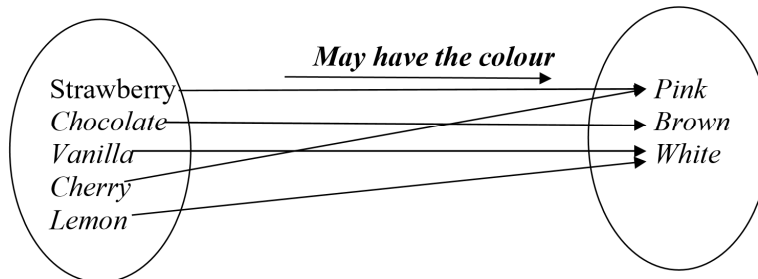
Element of a set: one of the objects in a set

Relation: associates the elements of one set with the elements of another set

Set of ice cream and set of colours

Strawberry may have the colour pink
(element) (association) (element of second set)

Arrow Diagram (Mapping):



Read only **one** way. Can't read, "Pink may have the colour strawberry"

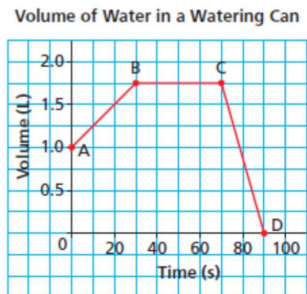
Table:

<i>Ice-cream</i>	<i>Colour</i>
<i>Strawberry</i>	<i>Pink</i>
<i>Chocolate</i>	<i>Brown</i>
<i>Vanilla</i>	<i>White</i>
<i>Cherry</i>	<i>Pink</i>
<i>Lemon</i>	<i>White</i>

Ordered Pairs: { (strawberry, pink), (chocolate, brown), (vanilla, white), (cherry, pink), (lemon, white)}

Interpreting and Sketching Graphs

Example 1: Describing a Possible Situation for a Graph



At 0s
Watering can has 1.0 L of water

From A → B
filling the watering can to 1.75 L of water for 30s

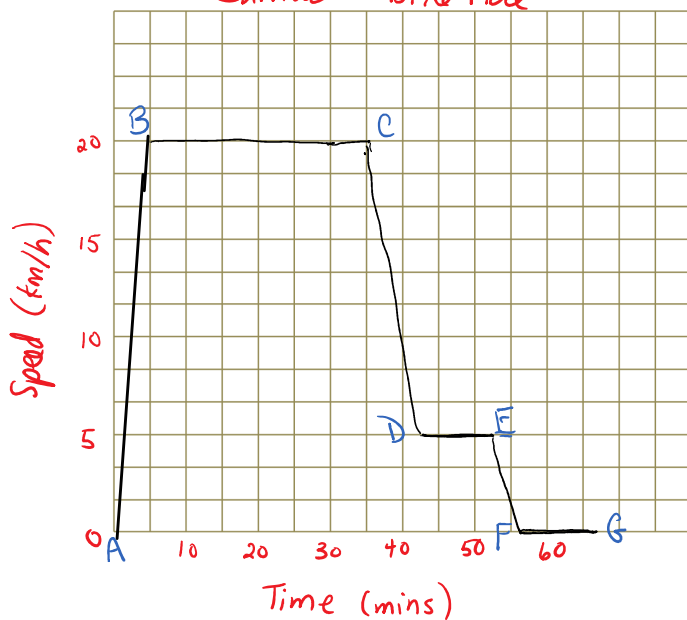
From B → C
walking to the plants for 40s
volume remains the same

From C → D
watering plants for 20s until water can is empty

Example 2: Sketching a Graph for a Given Situation

Samuel went on a bicycle ride. He accelerated until he reached a speed of 20 km/h, then he cycled for 30 min at approximately 20 km/h. Samuel arrived at the bottom of a hill, and his speed decreased to approximately 5 km/h for 10 min as he cycled up the hill. He stopped at the top of the hill for 10 min. Sketch a graph of speed as a function of time. Label each section of the graph, and explain what it represents.

Samuel's bike ride



A → B
accelerating from 0 to 20 km/h

B → C
cycling at 20 km/h for 30 mins

C → D
decreasing to 5 km/h

D → E
cycling at 5 km/h for 10 mins

E → F
decelerating and stopping

F → G
stop at top of hill for 10 mins

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