LESSON MAKER PRO

Function Direction Map

Track how one quantity changes with another.

GRADE 8 · MA.8.F.1.3

MA.8.F.1.3 "Analyze a real-world written description or graphical representation of a functional relationship between two quantities and identify where the function is increasing, decreasing or constant."

NAME _____ DATE _____

READ THE CHANGES

Read a table or graph from left to right. If y goes up as x goes up, the function is increasing. If y goes down, it is decreasing. If y stays the same, it is constant.

WORKED EXAMPLE

Table: x: 1/2, 3/2, 5/2, 7/2; y: 41, 46, 46, 39. Identify each interval.

1. From x=1/2 to x=3/2, y rises from 41 to 46.
2. From x=3/2 to x=5/2, y stays at 46.
3. From x=5/2 to x=7/2, y falls from 46 to 39.

Answer: Increasing from x=1/2 to x=3/2, constant from x=3/2 to x=5/2, and decreasing from x=5/2 to x=7/2.

PRACTICE 5 problems

1 Table: x: 0, 1, 2, 3; y: 8, 12, 16, 20. Where is the function increasing?

ANSWER _____

2 Table: x: 2, 4, 6, 8; y: 14, 14, 14, 14. Where is the function constant?

ANSWER _____

3 Table: x: 1, 3, 5, 7; y: 30, 25, 25, 19. Identify the decreasing and constant intervals.

ANSWER _____

4 A drone's height rises from 9 a.m. to 11 a.m., stays unchanged until noon, then falls until 2 p.m. Identify each interval.

ANSWER _____

5 A graph connects (0, 6), (4, 18), (6, 18), and (10, 8) in order. Identify each interval.

ANSWER _____

APPLY IT Show your work

1 During a gaming event, a tablet battery drops from 80% at 3:00 to 60% at 4:00. It stays at 60% until 4:30, then charges to 90% by 5:00. Identify each interval.

WORK SPACE

ANSWER _____

2 On a bike trail, elevation rises from mile 0 to mile 2, stays level from mile 2 to mile 3, then descends from mile 3 to mile 5. Identify each interval.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A graph connects (0, 3), (2, 11), (5, 4), (7, 10), and (9, 10) in order. Identify all increasing, decreasing, and constant intervals. Explain how the y-values show this.

WORK SPACE AND ANSWER

ANSWER KEY

Function Direction Map

GRADE 8 · MA.8.F.1.3

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Table: x: 0, 1, 2, 3; y: 8, 12, 16, 20. Where is the function increasing?	**Increasing from x=0 to x=3.**
2	Table: x: 2, 4, 6, 8; y: 14, 14, 14, 14. Where is the function constant?	**Constant from x=2 to x=8.**
3	Table: x: 1, 3, 5, 7; y: 30, 25, 25, 19. Identify the decreasing and constant intervals.	**Decreasing from x=1 to x=3 and from x=5 to x=7; constant from x=3 to x=5.**
4	A drone's height rises from 9 a.m. to 11 a.m., stays unchanged until noon, then falls until 2 p.m. Identify each interval.	**Increasing from 9 a.m. to 11 a.m., constant from 11 a.m. to noon, and decreasing from noon to 2 p.m.**
5	A graph connects (0, 6), (4, 18), (6, 18), and (10, 8) in order. Identify each interval.	**Increasing from x=0 to x=4, constant from x=4 to x=6, and decreasing from x=6 to x=10.**

PART 2 · APPLY IT

1. **Decreasing from 3:00 to 4:00, constant from 4:00 to 4:30, and increasing from 4:30 to 5:00.** Compare the battery percentages as time moves forward. They fall, stay equal, then rise.
2. **Increasing from mile 0 to mile 2, constant from mile 2 to mile 3, and decreasing from mile 3 to mile 5.** Elevation increases on the uphill section, does not change on the level section, and decreases on the downhill section.

CHALLENGE

Increasing from x=0 to x=2 and from x=5 to x=7; decreasing from x=2 to x=5; constant from x=7 to x=9. The y-values rise, then fall, then rise, then stay the same as x increases.

Accept equivalent interval wording, such as “between x=0 and x=3.” Students should identify changes as x moves from left to right or forward in time.