LESSON MAKER PRO

Connect the Dots?

Decide when a model needs points or a line.

HIGH SCHOOL · A2.F.1.9

A2.F.1.9 "Recognize whether a discrete or continuous graphical representation is appropriate to create a graph based upon a mathematical model."

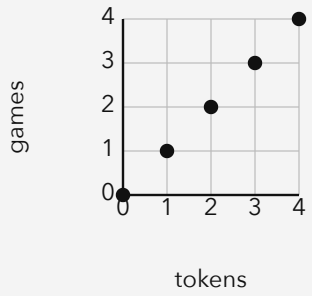
NAME _____ DATE _____

POINTS OR A LINE

Use separate points when the input can only be counted in whole numbers. Connect the points when values between them are possible. The meaning of the input, not the shape of the model, decides.

WORKED EXAMPLE

The graph models y=x, where x is tokens spent and y is arcade games played. Should you connect its points?



1. The input counts tokens, so it must be a whole number.
2. An input between the plotted points would mean part of a token.

Answer: No. The graph is discrete.

PRACTICE 4 problems

1 For y=5x, x is hours spent editing a video. Discrete or continuous? Explain.

ANSWER _____

2 For y=6x, x is the number of movie tickets bought. Discrete or continuous?

ANSWER _____

3 For y=9x, x is liters of paint used. Discrete or continuous?

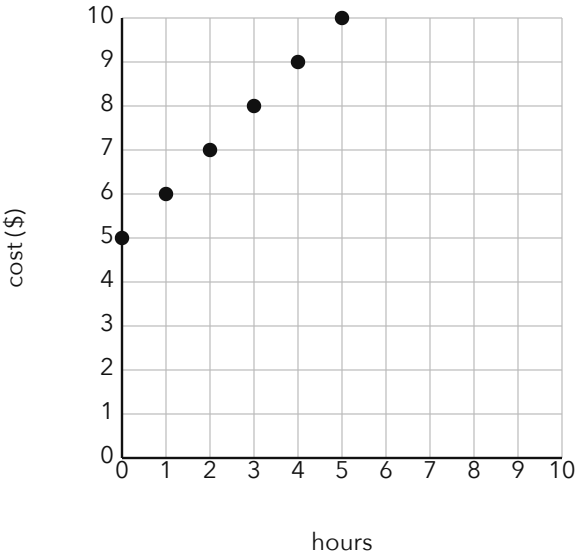
ANSWER _____

4 For y=8x, x is the number of phone cases sold. Should you connect the graph's points?

ANSWER _____

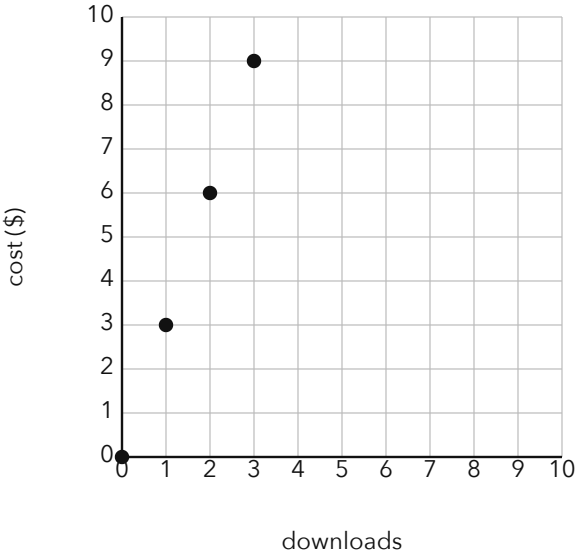
APPLY IT Show your work

1 A bike rental bills for fractions of an hour. The graph shows cost against time. Should you connect its points? Why?



ANSWER _____

2 Each music download costs $3. The graph shows cost against downloads. Would connecting its points show possible purchases? Why?



ANSWER _____

CHALLENGE One step up

The model y=11x describes A, dollars earned for each poster printed, or B, megabytes downloaded per second. For 0 <= x <= 5, which graph is discrete and which is continuous? Explain whether x=2.5 works in each.

WORK SPACE AND ANSWER

ANSWER KEY

Connect the Dots?

HIGH SCHOOL · A2.F.1.9

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For y=5x, x is hours spent editing a video. Discrete or continuous? Explain.	**Continuous. Editing time can include fractions of an hour.**
2	For y=6x, x is the number of movie tickets bought. Discrete or continuous?	**Discrete.**
3	For y=9x, x is liters of paint used. Discrete or continuous?	**Continuous.**
4	For y=8x, x is the number of phone cases sold. Should you connect the graph's points?	**No.**

PART 2 · APPLY IT

1. **Yes. Rental time can fall between the plotted hours.** The input is time, and the rental bills for fractions of an hour. Values between the plotted points are possible.
2. **No. You can buy only whole numbers of downloads.** The input counts downloads. Connecting the points would include fractional downloads.

CHALLENGE

A is discrete because posters are counted, so x=2.5 does not work. B is continuous because time can be 2.5 seconds.

Accept "separate points" for discrete and "connected points" for continuous when the explanation matches the input.