

Generic Graph Questions

LEVEL I

- A. Identify the independent (control) variable.
- B. Identify the dependent variable(s).
- C. What are the units for each variable?
- D. What is the appropriate scale for each axis?
- E. What is a meaningful title for the graph?
- F. What type of graph—bar, scatter, line—is appropriate for these data?

LEVEL II

- G. Describe in words how the dependent variable changes with respect to the independent variable.
- H. What type of relationship do the variables have? Is it direct, inverse, linear, exponential, or some other type?
- I. What are the units for the slope of the line or curve?
- J. What physical phenomenon is represented by the slope units?
- K. Describe in words how the slope of the line or curve changes as the graph is read from left to right.

LEVEL III

- L. What is the numerical value of the slope of the curve at various points on the horizontal axis?
- M. How do changes in the slope relate to the actual events (the physical phenomena) that we are representing with the graph?

LEVEL IV

- N. What are the units for the area under the curve?
- O. What physical phenomenon is represented by the area units?
- P. What is the numerical value of the area under the curve at various points on the horizontal axis?
- Q. How do changes in the area relate to the actual events (the physical phenomena) that we are representing with the graph?

LEVEL V

- R. What is a best-fit graph? When should it be used?
- S. When is it appropriate to interpolate or extrapolate from the data? How do you interpolate? How do you extrapolate?
- T. What is a correlation factor (r-factor)? When is it used?

CoreModels Graph Interpretation Guidelines

VERBAL DESCRIPTION

Reading the graph from left to right, you are describing the behavior of the dependent variable in enough detail that the reader could sketch the basic shape of the curve from your description.

Example 1

The dependent variable is increasing at a constant rate and has a y-intercept of ___.

Example 2

The dependent variable is increasing at an ever-increasing rate and has a y-intercept of ___.

MATHEMATICAL DESCRIPTION

If you have adequate information, you may be able to identify the type of mathematical function represented by the curve.

Example 1

Linear

Example 2

Unknown—could be exponential or a power (polynomial) function

CONTEXTUAL DESCRIPTION

You are applying your verbal description to the physical event being depicted, including appropriate units and terminology for both the line or curve and its slope.

Example 1

The object starts at a zero reference point and moves at a constant velocity measured in m/s for 12 seconds. The velocity is the slope of the line representing the position of the object.

Example 2

The deer population starts at 100 deer and increases exponentially for 50 years. The slope of the curve represents the growth in the deer population per year.