

GUIDED PRACTICE

1 a. What equation will relate a set distance d , average speed s , and driving time t for a trip?

distance = speed x time

b. How does an increase in average speed change the expected driving time for a fixed distance?

increase in speed – decrease in time

c. How is your answer to part b shown in the graphs of (*speed, time*) relations for any fixed distance?

as speed increases – time decreases

2. The distance between New York and Los Angeles is approximately 3000 miles.

a. How long will a trip from NY to LA take

- By airplane, averaging 450 mph 6.67 hrs
- By car, averaging 60 mph 5 hrs
- By bicycle, averaging 15 mph 200 hrs

b. What equation gives the time t for the trip as a function of the average speed s ?

time = dist/speed

c. Make a table showing the relation between speed and time for speeds of 50 to 500 mph. Make the graph on your calculator.

Speed	50	100	150	200	250	300	350	400	450	500
Time	60	30	20	15	12	10	8.57	7.5	6.67	6

d. Which change in speed causes the greater change in time for the trip: an increase from 50 to 100 mph or an increase from 450 to 500 mph? 50 to 100

INDEPENDENT PRACTICE

1. R varies inversely with variable T. If R is 168 when T = 24, find R when T = 30.

HINT: Remember $y = \frac{k}{x}$

R = 134.4

2. The volume, V, of a gas varies inversely as the pressure, p, in a container. If the volume of a gas is 200cc when the pressure is 1.6 liters per square centimeter, find the volume (to the nearest tenth) when the pressure is 2.8 liters per square centimeter.

P = 114.29 cc

3. In science, one theory of life expectancy states that the lifespan of mammals varies inversely to the number of heartbeats per minute of the animal. If a gerbil's heart beats 360 times per minute and lives an average of 3.5 years, what would be the life expectancy of a human with an average of 72 beats per minute? Does this theory appear to hold for humans?

Year = 17.5 No.

4. The values (9.7, 8) and (3, y) are from an inverse variation. Find the missing value and round to the nearest hundredth.

y = 25.87

5. A drama club is planning a bus trip to New York City to see a Broadway play. The cost per person for the bus rental varies inversely as the number of people going on the trip. It will cost \$30 per person if 44 people go on the trip. How much will it cost per person if 60 people go on the trip? Round your answer to the nearest cent, if necessary.

\$22

Determine whether x and y show *direct variation, inverse variation, or neither.*

11.

x	1	2	3	4
y	1	4	9	16

12.

x	2	5	8	15
y	60	24	15	8

13.

x	1	4	7	10
y	7.5	30	52.5	75

11. none

12. inverse

13. direct