Math Worksheet for 6th Grade

Dependent and independent variables

Name: Due Date: Teacher: Parent Sign:

1. In a plant-watering experiment, you record the height of a plant each week for 6 weeks. Which is the independent variable and which is the dependent variable?

2. A taxi company charges a base fare plus a rate per mile. If you record the total fare for different trip distances, what is the independent variable? What is the dependent variable?

3. You measure temperature every hour during the day. Identify the independent and dependent variables.

4. A recipe calls for 2 cups of flour for each batch of cookies. If you make different numbers of batches and record the amount of flour used, which variable is independent and which is dependent?

5. You record how many pages you read each day and the cumulative number of pages read in total. Which variable is dependent?

6. A store sells notebooks for $1.50 each. If x is the number of notebooks bought and y is the total cost, which variable is independent?

7. A clock shows minutes passed and you track how many laps a runner completes in that time. Which variable is independent?

8. The number of minutes spent studying and the test score are recorded. Which is the dependent variable?

9. A stopwatch measures time and you record how many meters a toy car travels in that time. Identify independent and dependent variables.

10. You track the number of days since planting a tree and its height in centimeters. Which is independent?

11. Table: A blender makes smoothies. The number of smoothies x versus the amount of fruit used y (cups) is given: (x,y) = (1,2), (2,4), (3,6). If the pattern continues, what is y when x = 5? Which variable depends on the other?

12. Table: A taxi charges $3 base plus $2 per mile. Complete the table for miles x = 0, 1, 3, 5; total fare y?

13. Table: Number of weeks (x) and plant height (y) in cm: x: 0,1,2,3; y: 5,8,11,14. What is the rule connecting x and y? What is y when x = 6?

14. A table lists hours worked x and pay y with $8 per hour: x = 2, 4, 7. Find y for each and state which is independent.

15. Fill in missing: For each additional pack of stickers you buy you get 7 stickers. If x packs -> y stickers, fill y when x = 0,2,4,10.

16. A car travels at a steady 60 km per hour. Make a small table for hours x = 0,1,2,3 and distance y. Which is independent?

17. A phone data plan charges $10 plus $5 per GB used. Write values of y when x = 0.5, 1, 3 (x in GB). Which variable is dependent?

18. A factory makes 12 toys per hour. If x is hours, write how many toys y are made after 4 hours and 9 hours.

19. The number of slices (y) from x pizzas when each pizza has 8 slices. Fill y for x=1,3,6.

20. A faucet leaks at 2 milliliters per minute. If you measure minutes x and water collected y, what is y when x = 15? Identify independent and dependent.

21. Word problem: Mia sells lemonade for $2 per cup. How much money does she get if she sells 7 cups? What is independent?

22. Word problem: A gym membership costs $25 per month plus $10 for a locker. If Jason pays $35, how many months did he sign up for?

23. Word problem: Each student needs 4 pencils for a project. How many pencils are needed for 9 students? Which is dependent?

24. Word problem: A baker uses 3 eggs for each cake. How many eggs for 12 cakes? Independent variable?

25. Word problem: A playground charges $0.75 per ride. If a family spends $6, how many rides did they take?

26. A graph shows points: (0,2), (1,5), (2,8), (3,11). Without drawing, is the graph increasing or decreasing? What is the change in y when x increases by 1?

27. Given points plotted: (2,4) and (4,8). If these are on a straight line through the origin, what is the rate of change (how much y changes per 1 x)?

28. Which variable is independent in a graph where time (minutes) is on the x-axis and distance (meters) on the y-axis?

29. A graph has points (1,3), (2,6), (3,9). If these are plotted, what will the point be when x = 4? Give the ordered pair.

30. A scatterplot shows that as study hours increase, test scores generally increase. Which is independent? Which is dependent?

31. You are given this table: x: 0,1,2,3; y: 10,7,4,1. Is y increasing or decreasing as x increases? What is the change each time x increases by 1?

32. A line on a graph passes through (0,4) and (2,10). What is the initial value (y when x=0)? What is the change in y per 1 x?

33. Points to plot: (0,0), (1,2), (2,4), (3,6). If plotted, is this proportional (directly proportional to x)? Why?

34. You plot the number of pages read (x) vs. time spent reading (y). If reading speed is constant, which variable should be independent and which dependent to make the line increase to the right?

35. A graph's y-values stay the same while x changes (for example points (1,5), (2,5), (3,5)). What does this tell you about the relationship? Which variable is independent?

36. A line on a coordinate grid has slope 3 and passes through (0,2). Write a simple rule in words: "for each 1 increase in x, y increases by _____ starting at _____."

37. Table: x: 0,2,4,6; y: 5,11,17,23. What is the rate of change of y per 2 units of x? What is the rate per 1 unit of x?

38. A graph shows the number of hot dogs eaten (y) versus minutes at a contest (x): after 10 minutes y=4, after 20 minutes y=8. Is y proportional to x? Why or why not? What is the rate?

39. Given the points (3,12) and (6,24), what is the unit rate (y per 1 x)? If x=0, what would y be assuming the same pattern passes through the origin?

40. You are given a line where each increase of x by 1 decreases y by 2. If y=10 when x=0, what is y when x=5? Is the line increasing or decreasing?

41. A water tank starts with 30 liters. Water is pumped out at 3 liters per minute. Write the rule in words connecting minutes x and liters y. What is y after 4 minutes?

42. A student graphs coins saved. She starts with $5 and adds $2 each week. List the ordered pairs for weeks x = 0,1,2,4. What is independent?

43. A simple linear rule: y = 4x + 1 (in words: each 1 x adds 4 to y starting at 1). If x=3, what is y? Which is dependent?

44. A line on a graph goes through (0,0) and (5,20). What is the constant rate? Predict y when x = 8.

45. You are given a table but one entry is missing: x: 1,2,3,4; y: 6,12,___,24. If the pattern is linear and proportional, find the missing y and state the rule.

46. A graph shows temperature (degC) vs. time (hours) during the morning: at 6am (x=6) temperature y=10, at 9am y=16. If temperature rises steadily, what is y at 8am?

47. A recipe scales: for 1 batch you need 3 cups sugar. If you want to make 0.5 batch, how much sugar? Which is independent?

48. A runner's distance is graphed against time. The graph is flat between x=2 and x=3 (y constant). What happened during that time to the runner?

49. A table shows x: 0,1,2,3,4 ; y: 2,5,8,11,14. Write the rule connecting x and y in words and predict y when x = 10.

50. Explain in one sentence why it is important to choose the correct independent variable when making a graph.