Trashketball

Name: Answer Key Period: _____

1. Hypothesis: If the distance from the basket increases, the shooting percentage will decrease.

2. Independent variable: distance from basket 3. Dependent variable: shooting percentage

4. Controls: type of trash-ball size of basket style of shot lighting noise wind number of attempts (other controls are possible)

5.

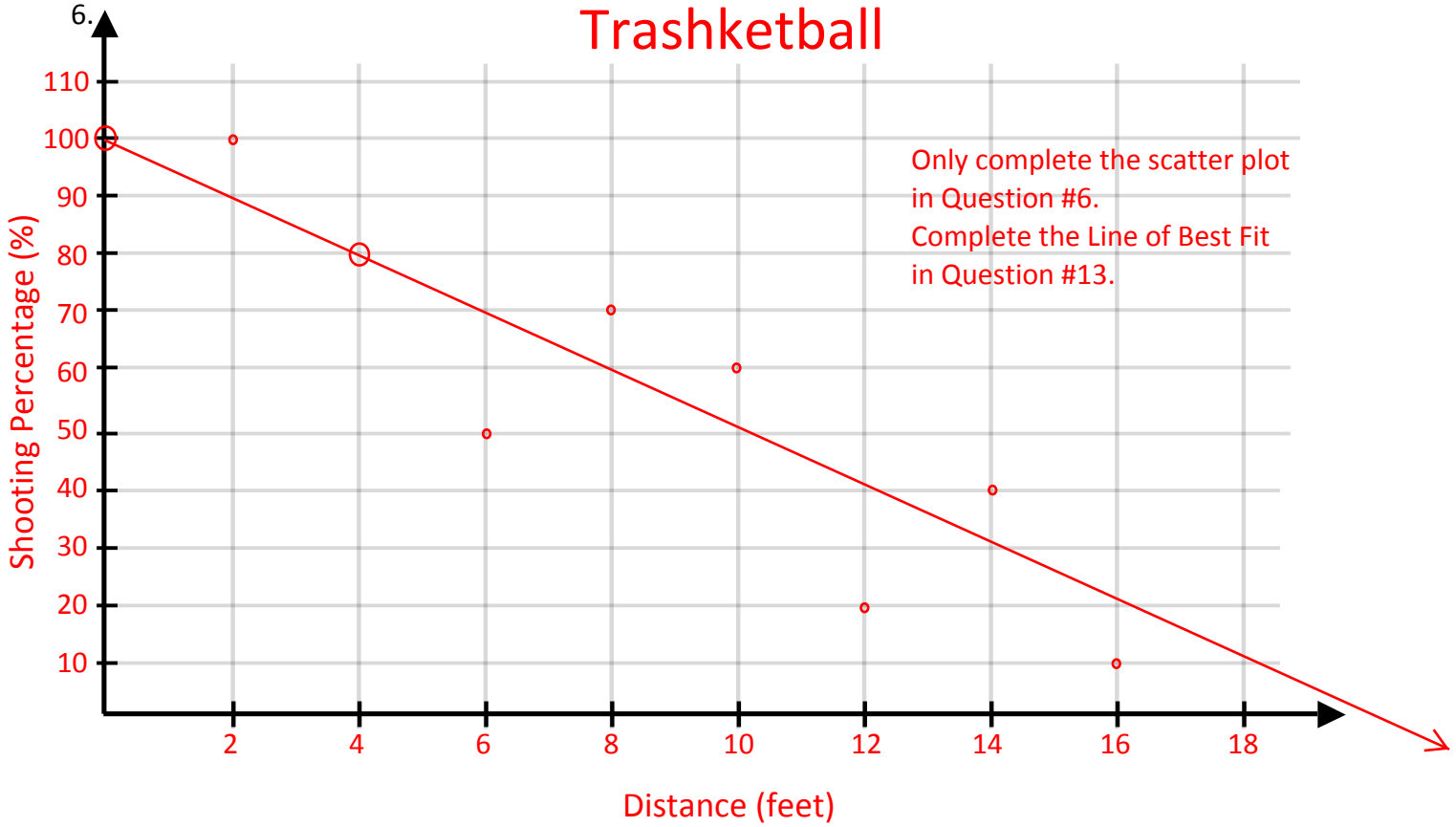
Distance (ft)	Attempts	Shots Made	Shooting Percentage
0	10	10	100 %
2	10	10	100 %
4	10	8	80 %
6	10	5	50 %
8	10	7	70 %
10	10	6	60 %
12	10	2	20 %
14	10	4	40 %
16	10	1	10 %

Scratch Work:

Table entries will vary by group. The number of attempts should remain constant throughout the experiment. To find the shooting percentage, divide "shots made" by "attempts" and multiply by 100.

This data is purely made up for the example. Have students create their own data.

6.



7. Define correlation – a relationship between two or more measures. (Clarify cor-relation. Discuss co-ordinate, co-exist, and col-laborate.)

8. Define positive correlation – a type of correlation where the approximation of the correlation (Line of Best Fit) has a positive slope.

9. Define negative correlation – a type of correlation where the approximation of the correlation (Line of Best Fit) has a negative slope.

10. Define relatively no correlation – a type of correlation where their is no reasonable approximation of the data.

11. What type of correlation does the data have?

Negative

12. What does this tell you about your hypothesis?

That our hypothesis is correct. The distance increase and the % decreases.

13. Create a Line of Best Fit on the graph from Question #6 that approximates the data from the experiment. (Hint: Be sure to draw line that goes through 2 points and divides the remaining points evenly.)

14. **Creating a Linear Model**

The equation of a line in Slope-Intercept Form is y = mx + b

m = slope = $\frac{\text{rise}}{\text{run}}$ b = y-intercept

15. Looking at the Line of Best Fit you drew, the b = 100.

16. Looking at 2 points on the Line of Best Fit, the rise = -20 and the run = 4, so the slope of the line is m = -20/4 = -5.

17. Using the Slope-Intercept Form, the Linear Model of the experiment is y = -5x + 100

18. **Testing the Accuracy of the Model**

Manipulated variable: blindfold the shooter (larger basket, more distractions, etc.)

19. The shooting percentage, *y*, will be less than (student may choose differently) the model.

20. The **Linear Inequality** is y < -5x + 100.

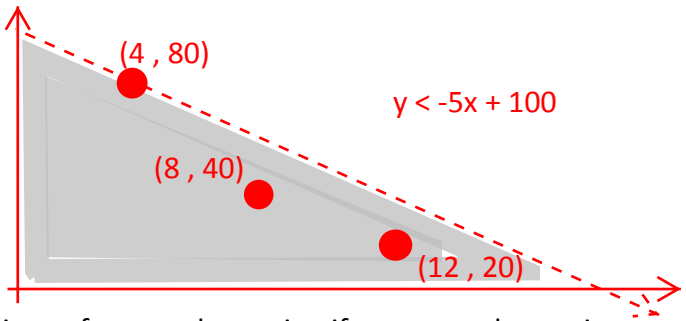
21. New Data

Distance (ft)	Attempts	Shots Made	Shooting Percentage
4	5	4	80 %
8	5	2	40 %
12	5	1	20 %

Scratch Work:

This data is purely made up for the example. Have students create their own data.

22. Sketch the Linear Inequality you created in Question #20 below. Be sure to consider whether you will use a regular or dotted line and lightly shade in the appropriate direction. Plot your new data points on the graph. Label their coordinates.



23. On a separate piece of paper, determine if your new data points are solutions to the linear inequality from Question #20.

(4,80) 80 < -5(4) + 100
80 < -20 + 100
80 ≮ 80 ; (4,80) is not a solution.

(8,40) 40 < -5(8) + 100
40 < -40 + 100
40 < 60 ; (8,40) is a solution.

(12,20) 20 < -5(12) + 100
20 < -60 +100
20 < 40 ; (12,20) is a solution.