

3.2 Build Linear Models from data

OBJECTIVES of 3.2

- Draw and interpret scatter diagrams (plots)
- Distinguish between linear & non linear relations
- Use graphing calculator to find LINE of BEST FIT

Review what is a scatter plot?

What is a linear equation? Non linear?

What is correlation?

A. Draw and Interpret Scatter Diagrams

- a scatter diagram is used to help use determine if a relation exists between two or more variables.

Example

In softball & baseball on-base percentage is the percentage of that a player reaches a base safely. Data from the below situations looks at the on-base percentage (x) and the number of runs scored by a team.

Team	On base % (x)	Runs Scored (y)	(x, y)
1	33.7	849	
2	33.7	781	
3	34.1	813	
4	33.2	735	
5	34.7	865	
6	32.4	746	
7	32.7	691	
8	33.1	758	
9	31.9	716	
10	33.1	773	
11	32.7	730	
12	33.8	746	
13	33.6	749	
14	33.2	731	
15	33.4	834	
16	34.8	820	

Steps for scatter diagram

1. Set up/draw
2. Use graphing calc
3. What happens to runs scored as the on-base % increases?

B. Distinguish Between Linear and Nonlinear Relations

Example of using Data to Find a Model for Linearly Related Data

Data

X		1	2	3	4	5	.
Y		113	114	119	122	129	

- graph points
- select two points which best represent entire data
- use point slope form to get linear model $y = mx + b$

C. Use a graphing utility to find the line of Best Fit