

Basic Statistics Practice #3

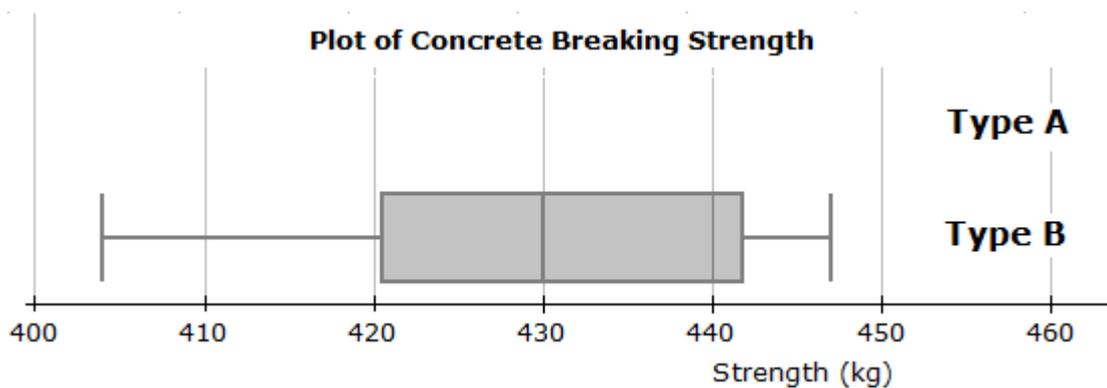
1. The turnover (amount of money taken in, before expenses) of two small plumbing businesses is shown in the table below.

Year	ABC	DEF
2006	\$113,000	\$76,000
2007	\$122,000	\$92,000
2008	\$115,000	\$85,000
2009	\$130,000	\$110,000
2010	\$135,000	\$115,000
2011	\$130,000	\$125,000

- Graph the information in the most suitable manner in the grid shown.
- Describe any trends seen in the information.
- How much would you estimate ABC will turn over in 2012?

2. A scientist testing concrete samples for their strength gets the following readings for 18 samples of Type A (the numbers are breaking strength in kilograms – higher is better).

410, 415, 417, 418, 418, 425, 428, 429, 431, 432, 434, 435, 438, 442, 443, 446, 448, 453



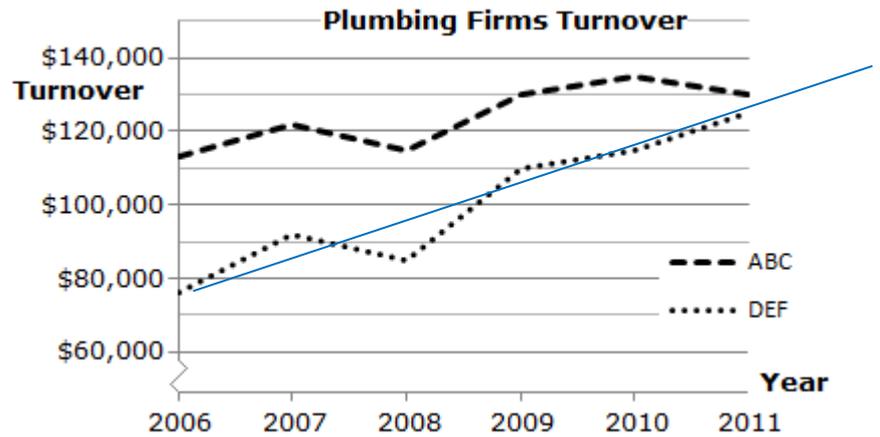
- What is the mean breaking strength of Type A?
- Plot a box-and-whisker graph in the space provided above to compare it with Type B.
- What do the mean and median calculated above say about the strength of Type A?
- Type B has a mean of 431 kg and the box-and-whisker for it is shown. Which is the stronger type? Explain your answer in terms of the statistics or graphs.

Answers: Basic Statistics Practice #3

1.

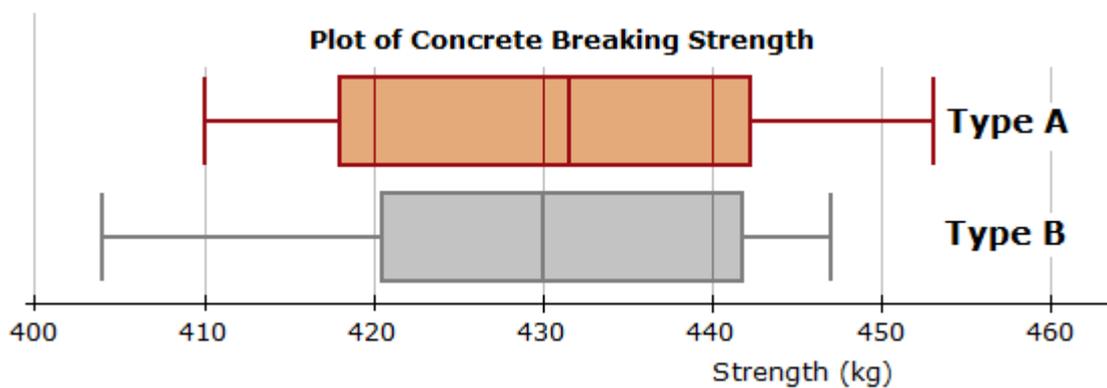
red is Achieved answers

blue is Merit or Excellence



- Graphed more or less as above, ideally with a shortened vertical axis to see the detail better. It should be a line graph, as the best way to show a trend over time. A bar graph is less good, and a histogram even worse.
- ABC's turnover is trending fairly steadily upwards at about \$10,000 extra per year. DEF's turnover is trending upwards much more slowly, and may even be flat now.
- From extending the line of the trend, one would predict about \$135,000 for 2012

2. 410, 415, 417, 418, 418, 425, 428, 429, 431, 432, 434, 435, 438, 442, 443, 446, 448, 453



- Type A has a mean of 431.22 kg breaking strength.
- Box-and-whisker 5 points are = 410 – 418 – 431.5 – 442 – 453. (Allow one small mistake.)
- They show that the normal (typical) sample of Type A has a strength of around 431 kg before it breaks.
- Type A is stronger, because most points on the box and whisker are a higher value. Type A is stronger overall, not because the typical specimens are stronger (they have similar means and medians) but because it has less very weak samples and more very strong ones, which we see from both the whiskers ending much further to the right.