Mean, median, mode, probability

- Calculators allowed
- Answer questions on separate paper
- Give us a clue as to how you are getting to your answers!

1) a) Find the mean of the following salaries: £82 500, £19 500, £17 250, £22 350, £14 500.
   b) Write a sentence explaining why the mean may not be a 'good' average for this data set.

2) The heights of 6 people were measured in centimetres as 183, 156, 175, 167, 174, 183.

   a) Find the median height of this group

   b) Find the mode of this set of data

   c) Which of the two averages is the more 'typical'?

3) Seven people are in the room and their average age is 35 years. One person leaves, and the average age of those remaining drops to 30 years. How old was the person who left?

4) What is the probability of tossing two heads in a row with a fair coin?

5) You roll a pair of dice in a game and to start you must roll two sixes. What is the probability of rolling two sixes?

6) In a rather unusual game, you roll two dice and the score is the product of the numbers on each die.

   a) Make a possibility space diagram showing all the possible scores
   b) What is the probability of a score higher than 20?

7) List all the possible results from tossing a fair coin three times (HHH for three heads, HHT and so on).

   a) What is the probability of tossing *at least* two heads?
   b) What is the probability of tossing *at least* one tail?

8) Suppose the median of a set of numbers was *roughly* half the mode. What can you say about the numbers? Write a sentence. Make up an example data set.

Answers

- Marked out of 23
- Some methods must be shown, especially for Q6

1) a) £31 220 M1A1
b) Any sentence that points out that one salary is much higher than the others A1
Clearly expressed recognition that £32 220 is higher than most of the salaries, and is 'typical' of none. A1

2) a) 174.5 M1A1
b) 183 A1
c) Median as mode is 'untypical' A1

3) $7 \times 35 - 6 \times 30 = 65$ M2A1

4) $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ (or counting the HH as one of 4 outcomes) M1A1

5) $\frac{1}{36}$ M1A1

6) 24, 24, 25, 30, 30 and 36 are larger than 20, so $\frac{6}{36} = \frac{1}{6}$ M1A1

7) a) $\frac{4}{8} = \frac{1}{2}$ (at least 2 heads includes 3 heads) M1A1

b) $1 - \frac{1}{8} = \frac{7}{8}$ or by direct counting M1A1

8) Very strong peak at the high end of the range. A1

Valid example (hard) A1