Age 14+ Level ★
Worksheet 1 – Solutions

1. **Average Discovery**
   The fifth number is 9
   nrich.maths.org/5691/solution

2. **Partial Means**
   The mean of the last 28 numbers is 100
   nrich.maths.org/6718/solution

3. **Mean Balance**
   🔴 = 9
   🟦 = 6
   nrich.maths.org/12810/solution

4. **Beta Rovers**
   The mode is 1 goal per match
   The median is 2 goals per match
   nrich.maths.org/14354/solution

5. **Ladybird Football Team**
   The pine ladybird has 4 spots
   nrich.maths.org/11671/solution

Age 14+ Level ★★
Worksheet 1 – Solutions

1. **Smallest Range**
   The smallest possible range is 4
   (when the integers are 2015, 2016, 2018, 2019)
   nrich.maths.org/13522/solution

2. **Equal Means**
   $x = 19$
   nrich.maths.org/11697/solution

3. **Dopey Measurement**
   The mean height of the Seven Dwarfs is 112.8cm (to 1 d.p.)
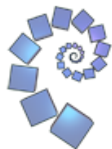   nrich.maths.org/6252/solution

4. **Driving Test**
   Mallick has the highest pass rate
   nrich.maths.org/14007/solution

These problems are adapted from UKMT (ukmt.org.uk) and WMC (competition.ac) problems.

Age 14+ Level ★★
Worksheet 2 – Solutions

1. **Gamma City**
   The mode is 0 goals per match
   The median is 1 goal per match
   nrich.maths.org/14355/solution

2. **Mean Median**
   The median weight of the children is 48kg
   nrich.maths.org/12618/solution

3. **Acceptance Rate**
   The school accepted 390 students in 2011
   nrich.maths.org/12588/solution

4. **A Mean Calculation**
   One possible approach:
   Subtracting 100 from each of the numbers gives

   -3   -3   -2   -1   -1   -1   0   0   1   1   3   4   4   5

   These numbers add up to 7, so their mean is $7 \div 14 = 0.5$

   So the mean of the original numbers is 100.5.
   nrich.maths.org/12851/solution

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Age 14+ Level ★★
Worksheet 3 – Solutions

1. **Algebraic Average**
    The mean of y and z is x
    nrich.maths.org/5756/solution

2. **Maximum Mean**
    The largest possible value for the mean is 54
    nrich.maths.org/13795/solution

3. **Sample**
    Opportunity samples:
    The first came from the second population
    the second came from the third population
    the third came from the first population

    Systematic samples:
    The first came from the third population
    the second came from the second population
    the third came from the first population

    The **random samples** could have come from any of the population samples, but it is likely that the samples with more blue squares came from the populations with more blue squares
    nrich.maths.org/14097/solution

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Age 14+ Level ★★★
Worksheet 1 – Solutions

1. Jewellery Boxes
The total value of the jewels is £24 000
nrich.maths.org/3104/solution

2. Possible Range
The largest possible range is 7
nrich.maths.org/12625/solution

3. Very Average
$a = 200$
nrich.maths.org/14223/solution

4. Changing Averages
$m = 20$
nrich.maths.org/13668/solution

5. Pay Attention
On average 58% of the talk was heard
nrich.maths.org/12867/solution

These problems are adapted from UKMT (ukmt.org.uk) and WMC (competition.ac) problems.