MATHLETICS

Statistics and Probability

Teacher Book - Series I-1

mean… mode… median…

Mathletics Instant Workbooks

Statistics and probability

Topic Test   PART A

Instructions   This part consists of 12 multiple-choice questions

Each question is worth 1 mark

Fill in only ONE CIRCLE for each question

Calculators are NOT allowed

Time allowed: 15 minutes   **Total marks = 12**

Marks

1 From the set of scores $3, 5, 4, 6, 5, 5, 3, 5, 4, 5$ the mode is

Ⓐ 6   Ⓑ 5   Ⓒ 4.5   Ⓓ 4 |1|

2 The range of the set of scores $8, 9, 11, 6, 9, 8, 5, 7, 13, 6$ equals

Ⓐ 7   Ⓑ 9   Ⓒ 4   Ⓓ 8 |1|

3 What is the difference between the mean and the mode of scores $30, 50, 60, 30, 70$?

Ⓐ 2   Ⓑ 12   Ⓒ 18   Ⓓ 20 |1|

4 'HOW NOW BROWN COW'. Which of the answers below gives the mode?

Ⓐ O only   Ⓑ W only   Ⓒ O and W only   Ⓓ O, W and N |1|

5 The mean of the set of scores $3, 5, 3, 3, 7, 3, 6, 5, 4, 3$ equals

Ⓐ 4.1   Ⓑ 4.2   Ⓒ 3   Ⓓ 5 |1|

6 The median of the set of scores $2, 5, 3, 6, 2, 2, 7, 8, 2, 3, 4$ equals

Ⓐ 2   Ⓑ 3   Ⓒ 4   Ⓓ 5 |1|

7 From a normal pack of 52 playing cards, one card is selected at random. The probability of a diamond is

Ⓐ $\frac{1}{13}$ Ⓑ $\frac{2}{13}$ Ⓒ $\frac{1}{4}$ Ⓓ $\frac{3}{4}$ |1|

8 A card is chosen at random from a pack of 52 playing cards. What is the probability that the card is red?

Ⓐ $\frac{1}{4}$ Ⓑ $\frac{1}{3}$ Ⓒ $\frac{1}{2}$ Ⓓ $\frac{3}{4}$ |1|

9 In a single throw of one die, find the probability of having an even number.

Ⓐ $\frac{1}{6}$ Ⓑ $\frac{1}{3}$ Ⓒ $\frac{1}{2}$ Ⓓ $\frac{2}{3}$ |1|

10 In a toss of two coins, find the probability of having two tails.

Ⓐ $\frac{1}{2}$ Ⓑ $\frac{1}{3}$ Ⓒ $\frac{1}{4}$ Ⓓ 1 |1|

11 A bag contains four white, three red and two black balls. If a ball is drawn at random, the probability of a white ball is

Ⓐ $\frac{3}{9}$ Ⓑ $\frac{4}{9}$ Ⓒ $\frac{2}{9}$ Ⓓ $\frac{5}{9}$ |1|

12 A card is chosen at random from a pack of 52 cards. What is the probability that the card is an ace?

Ⓐ $\frac{1}{4}$ Ⓑ $\frac{1}{2}$ Ⓒ $\frac{1}{13}$ Ⓓ $\frac{2}{13}$ |1|

Total marks achieved for PART A |12|

Statistics and probability

Topic Test

PART B

Instructions
This part consists of 15 questions
Each question is worth 1 mark
Write answers in the answers-only column

Time allowed: 20 minutes

Total marks = 15

Questions	Answers only	Marks

For the given set of scores 3, 5, 3, 3, 7, 3, 6, 5, 4, 3 find

1   the mean _____ | 1 |

2   the mode _____ | 1 |

3   the median _____ | 1 |

4   the range _____ | 1 |

For the set of scores given opposite, find

Score	Frequency
6	4
7	5
8	7
9	6
10	3

5   the mode _____ | 1 |

6   the mean _____ | 1 |

7   the median _____ | 1 |

8   the range _____ | 1 |

In a single throw of one die, find the probability of

9   an odd number _____ | 1 |

10   a three _____ | 1 |

11   a seven _____ | 1 |

A bag contains five red, seven blue and three white balls. If a ball is drawn at random, find the probability that it is

12   a red ball _____ | 1 |

13   a blue ball _____ | 1 |

14   a white ball _____ | 1 |

15   not a white ball _____ | 1 |

Total marks achieved for PART B [15]

Answers – Statistics and probability

PAGE 1 **1** **a** 90° **b** 90° **c** 90° and 180° **d** 90° **e** 180° **f** equal **g** 360° **h** equal **i** equal **j** 180° **2** **a** 180° **b** equal **c** 60°
d sum **e** two **f** all three **3** **a** 360° **b** parallel **c** right **d** equal **e** equal **f** equal, equal

PAGE 2 **1** **a** $x = 50°$ **b** $m = 110°$ **c** $x = 50°, y = 130°$ **d** $x = 120°$ **e** $x = 60°$ **f** $x = 40°$ **2** **a** $x = 100°$ **b** $a = 35°$ **c** $x = 30°$
d $y = 40°$ **e** $a = 60°$ **f** $a = 85°, b = c = 95°$ **3** **a** $x = 60°$ **b** $x = 55°, y = 35°$ **c** $x = 90°$

PAGE 3 **1** **a** $x = 70°$ **b** $x = 120°$ **c** $x = 110°$ **2** **a** $x = 100°, y = 80°$ **b** $x = 75°, y = 105°$ **c** $x = 70°, y = 110°$ **d** $x = 135°,$
$y = 45°$ **e** $x = 115°, y = 115°$ **f** $x = 110°, y = 70°$ **3** **a** $x = 72°$ **b** $a = 50°, b = 50°$ **c** $a = b = c = 65°$ **d** $x = 90°$ **e** $x = 100°$ **f** $a = 90°$

PAGE 4 **a** $x = 30°$ **b** $x = 40°$ **c** $a = 60°$ **d** $m = 60°$ **e** $x = 20°$ **f** $y = 55°$ **2** **a** $x = 80°$ **b** $x = 118°$ **c** $a = 40°$ **d** $a = 76°$ **e** $x = 45°$
f $a = 80°$ **3** **a** $a = 30°, b = 60°$ **b** $x = 30°, y = 125°$ **c** $m = 50°, n = 55°$

PAGE 5 **1** **a** $x = 110°$ **b** $m = 45°$ **c** $a = 70°$ **d** $x = 30°$ **e** $x = 70°, y = 110°$ **f** $x = z = 110°, y = 70°$ **2** **a** $a = 140°$ **b** $m = 55°$ **c** $x = 47°$
d $x = 95°, y = 70°$ **e** $x = 58°,$ **f** $a = 85°, y = 65°$ **3** **a** $a = 60°, x = 110°, y = 70°$ **b** $a = 75°, x = 70°$ **c** $x = 20°, y = 170°, a = 5°$

PAGE 6 **1** **a** $a = 50°, y = 40°, x = z = 90°$ **b** $a = 50°, b = 50°, c = 130°$ **c** $a = 40°, b = 40°$ **d** $x = 150°$ **e** $a = 45°$ **f** $x = 65°, y = 60°,$
$z = 55°$ **2** **a** $a = 25°, b = 80°$ **b** $p = 95°, n = 80°, m = 95°$ **c** $a = 35°$ **d** $y = 50°$ **e** $c = 40°, a = 80°, b = 60°$ **f** $a = 30°, b = 35°$
3 **a** $a = b = d = 60°, c = e = 120°$ **b** $x = 30°$ **c** $a = 65°, b = 115°, d = 45°, c = 20°$

PAGE 7 Answers will vary.

PAGE 8 **1** 35° **2** 45° **3** 30°, 60° **4** 30°, 60°, 90° **5** 13 cm **6** 55° **7** 60° **8** 44° **9** 47° **10** 60°

PAGE 9 **1** B **2** D **3** B **4** B **5** A **6** B **7** D **8** A **9** B **10** B **11** A **12** A

PAGE 10 **1** $x = 47°$ **2** $a = 65°$ **3** $m = 80°$ **4** $a = 65°$ **5** $x = 70°$ **6** $n = 30°$ **7** $a = 70°, b = 110°$ **8** $x = 95°$ **9** $y = 115°$ **10** $m = 50°$
11 $x = 45°, y = 90°$ **12** $m = 60°, n = 80°$ **13** $x = 59°$ **14** $x = 55°, y = 70°$ **15** $a = 65°$

PAGE 1 **1** **a** (Score, tally, frequency): 3, I, 1; 4, I, 1; 5, III, 3; 6, ₴₴₴ I, 6; 7, ₴₴₴ I, 6; 8, III, 3; 9, IIII, 4; total = 24
b (Score, tally, frequency): 165, I, 1; 166, II, 2; 167, ₴₴₴, 5; 168, II, 2; 169, II, 2; 170, IIII, 4; 171, III, 3; 172, ₴₴₴, 5; 173, I, 1; 174,
III, 3; total = 28 **2** **a** (Score, tally, frequency): 0, I, 1; 2, II, 2; 3, III, 3; 4, I, 1; 5, III, 3; 6, II, 2; 7, ₴₴₴, 5; 8, I, 1; 10, II, 2; total = 20
b (Score, tally, frequency): 4, I, 1; 5, II, 2; 6, ₴₴₴ III 8; 7, II, 2; 8, I, 1; 9, IIII, 4; 10, II, 2; total = 20

PAGE 2 **1** (score, tally, frequency): 0, ₴₴₴, 5; 1, ₴₴₴ ₴₴₴, 10; 2, **2** (Score, tally, frequency): 46, ₴₴₴ II, 7; 47, II, 2; 48, ₴₴₴ II, 7; 49,
₴₴₴ ₴₴₴ III, 13; 3, ₴₴₴ ₴₴₴ III, 13; 4, IIII, 4; 5, ₴₴₴, 5; total = 50 III, 3; 50, IIII, 4; 51, II, 2; 52, III, 3; 53, I, 1; 54, I, 1; total = 30
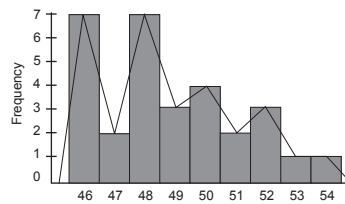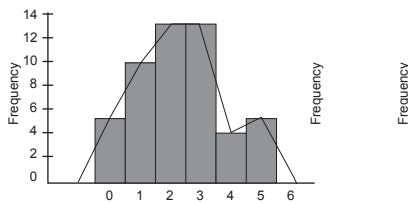
PAGE 3 **1** **a** 5 **b** 8.25 **c** 8.5 **d** 13.5 **e** 8.5 **f** 10 **g** 3.2 **h** 7.2̇ **i** 4.7̇ **2** **a** 4.4̇5̇ **b** 4.1̇3̇ **c** 7.1̇6̇ **d** 6.6̇ **3** **a** 6, 15, 8, 10, 18; $x \equiv 3.8$
b 0, 3, 8, 6, 12; $\bar{x} = 2.07$ **c** 2, 6, 12, 8, 15 ; $\bar{x} = 3.07$

PAGE 4 **1** **a** 5 **b** 7 **c** 2 **d** 5 **e** 6 **f** 9 **g** 3 **h** 3 **2** **a** 3 **b** 11 **c** 9 **d** 7 **e** 21 **f** 4 **g** 52 **h** 9 **3** **a** 4 **b** 8 **c** 5 **d** 8 **e** 2 **f** 5

PAGE 5 **1** **a** 7 **b** 17 **c** 8 **d** 15 **e** 5 **f** 19 **2** **a** 8 **b** 15 **c** 52 **d** 9 **e** 9 **f** 9 **3** **a** 36 **b** 3 **c** 11 **d** 11 **e** 5 **f** 15

PAGE 6 **1** **a** 7 **b** 7 **c** 9 **d** 8 **e** 9 **f** 14 **g** 17 **h** 19 **i** 14 **j** 22 **2** **a** 19 **b** 27 **c** 52 **d** 29 **e** 67 **f** 33 **g** 15 **h** 15 **i** 17 **j** 50 **3** **a** 30
b 15 **c** 61 **d** 13 **e** 36 **f** 14 **g** 25 **h** 50

PAGE 7 **1** **a** (Score, tally, frequency): 1, I, 1; 2, II, 2; 3, III, 3; **2** **a** (Score, tally, frequency): 0, ₴₴₴ I, 6; 1, ₴₴₴ II, 7; 2, ₴₴₴ III,
4, I, 1; 5, III, 3; 6, II, 2; 7, ₴₴₴, 5; 8, I, 1; 9, II, 2; total = 20 8; 3, IIII, 4; 4, III, 3; 5, II, 2; total = 30 **b** see diagram
b see diagram **c** see diagram **d** $\bar{x} = 5.3$ **e** 7 **f** 5.5 **g** 8 **c** see diagram **d** $\bar{x} = 1.9$ **e** 2 **f** 2 **g** 5
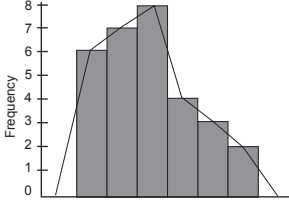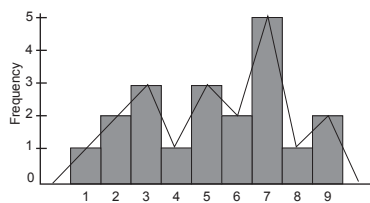
PAGE 8 **1** **a** $\frac{1}{2}$ **b** $\frac{7}{20}$ **c** $\frac{3}{20}$ **d** $\frac{13}{20}$ **e** $\frac{17}{20}$ **f** 0 **2** **a** $\frac{1}{6}$ **b** $\frac{1}{2}$ **c** $\frac{1}{2}$ **d** $\frac{1}{3}$ **e** 0 **f** 1 **3** **a** $\frac{5}{9}$ **b** $\frac{4}{9}$ **c** $\frac{1}{3}$ **d** $\frac{1}{9}$ **4** **a** $\frac{1}{4}$ **b** $\frac{1}{2}$ **c** $\frac{1}{13}$ **d** $\frac{1}{2}$ **e** $\frac{3}{4}$
f $\frac{2}{13}$ **5** **a** $\frac{2}{3}$ **b** $\frac{1}{3}$ **c** $\frac{2}{3}$ **d** $\frac{1}{3}$ **6** **a** $\frac{1}{2}$ **b** $\frac{1}{2}$ **c** $\frac{1}{10}$ **d** $\frac{3}{10}$ **e** $\frac{3}{5}$ **f** 0 **g** $\frac{2}{5}$ **h** $\frac{3}{10}$ **i** $\frac{1}{5}$ **j** $\frac{1}{5}$

PAGE 9 **1** **a** $\frac{1}{4}$ **b** $\frac{1}{2}$ **c** $\frac{1}{4}$ **d** $\frac{1}{4}$ **2** **a** 12 **b** $\frac{5}{12}$ **c** $\frac{1}{4}$ **d** $\frac{1}{2}$ **e** $\frac{1}{2}$ **f** $\frac{1}{4}$ **3** **a** $\frac{4}{9}$ **b** $\frac{2}{3}$ **4** **a** $\frac{3}{8}$ **b** $\frac{1}{8}$

PAGE 10 **1** 3 **2** 11 **3** 9 **4** $23 400 **5** 3750 km **6** $\frac{1}{2}$ **7** $\frac{3}{8}$ **8** 56 times **9** $\frac{1}{13}$ **10** $290

PAGE 11 **1** B **2** D **3** C **4** C **5** B **6** B **7** C **8** C **9** C **10** C **11** B **12** C

PAGE 12 **1** 4.2 **2** 3 **3** 3.5 **4** 4 **5** 8 **6** 7.96 **7** 8 **8** 4 **9** $\frac{1}{2}$ **10** $\frac{1}{6}$ **11** 0 **12** $\frac{1}{3}$ **13** $\frac{7}{15}$ **14** $\frac{1}{5}$ **15** $\frac{4}{5}$