1.14 Estimation and Checking: 1-hour Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Estimate the value of (3.7 x 8.9) ÷ 2.1 by rounding each number to 1 significant figure.

(3)

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2 Estimate the sum by rounding each number to 1 significant figure, then add your estimates.

(a) Estimate 18 750 + 4 220. **(3)**

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3 A school has £6280 to spend on pencils. One pack costs £0.57. Estimate how many packs it can buy, by rounding each number to 1 significant figure.

(3)

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4 By rounding each number to 1 significant figure, estimate the value of 12.6 x 66.

(2)

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5 Estimate the value of (9.2 + 8.5) ÷ (9.4 - 6.9) by rounding each number to 1 significant figure.

(3)

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6 By rounding each number to 1 significant figure, estimate the value of 1.86 x 52.

(2)

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7 By rounding each number to 1 significant figure, estimate the value of 97.2 x 5.

(2)

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8 Mel estimates 7.1 x 8.1 by rounding each number to 1 significant figure. Her estimate is 56.
Is her estimate an overestimate or an underestimate? Give a reason.

(2)

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9 Use 1 significant figure estimates to approximate each product. Round first, then multiply mentally.

(a) Estimate 1 780 x 2 450. **(3)**

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10 Femi says that 62 x 63 = 3906. Use estimation to check, and then work out the correct answer if Femi is wrong.

(2)

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11 Mel estimates 2.6 ÷ 9.1 by rounding each number to 1 significant figure. Her estimate is 1/3.
Is her estimate an overestimate or an underestimate? Give a reason.

(2)

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12 Elena says that 59 x 65 = 3835. Use estimation to check, and then work out the correct answer if Elena is wrong.

(2)

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13 By rounding each number to 1 significant figure, estimate the value of 0.77 x 7.

(2)

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14 Mel estimates 7.9 x 3.7 by rounding each number to 1 significant figure. Her estimate is 32.
Is her estimate an overestimate or an underestimate? Give a reason.

(2)

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15 Dev says that 96 x 27 = 2592. Use estimation to check, and then work out the correct answer if Dev is wrong.

(2)

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16 By rounding each number to 1 significant figure, estimate the value of 42.6 x 5.4.

(2)

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17 Mel estimates 6.7 ÷ 8.2 by rounding each number to 1 significant figure. Her estimate is 0.875.
Is her estimate an overestimate or an underestimate? Give a reason.

(2)

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18 One pack of pencils costs £0.80. A school buys 802 packs. Estimate the total cost by rounding each number to 1 significant figure.

(3)

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19 Round 4281 to 1 significant figure.

(1)

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20 A rectangular room measures 3.8 m by 6.4 m. Estimate its area by rounding each measurement to 1 significant figure, then compare your estimate with the exact area of 24.32 m². State whether the estimate is an overestimate or an underestimate.

(3)

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Mark scheme · 1.14 Estimation and Checking: 1-hour Pack

Question 1

all numbers rounded to 1 significant figure	M1
correct calculation with rounded values, eg 4 x 9 ÷ 2	M1
18 cao	A1

Answer: **18**

Question 2

(a) first number rounded to 1 s.f. correctly: 18 750 -> 20 000	M1
(a) second number rounded to 1 s.f. correctly: 4 220 -> 4 000	M1
(a) correct estimated total 24 000 cao	A1

(a) Answer: **24000**

Question 3

rounds to 6000 and 0.6	M1
6000 ÷ 0.6 attempted	M1
10000 cao	A1

Answer: **10000**

Question 4

both numbers rounded to 1 significant figure (10 and 70)	M1
700 cao	A1

Answer: **700**

Question 5

all numbers rounded to 1 significant figure	M1
correct calculation with rounded values, eg (9 + 9) ÷ (9 - 7)	M1
9 cao	A1

Answer: **9**

Question 6

both numbers rounded to 1 significant figure (2 and 50)	M1
100 cao	A1

Answer: **100**

Question 7

both numbers rounded to 1 significant figure (100 and 5)	M1
500 cao	A1

Answer: **500**

Question 8

compares the rounded values with the originals (7.1 to 7, 8.1 to 8) or finds the exact value 57.510	M1
An underestimate with correct reason	A1

Answer: **An underestimate**

Question 9

(a) first number rounded to 1 s.f. correctly: 1 780 -> 2 000	M1
(a) second number rounded to 1 s.f. correctly: 2 450 -> 2 000	M1
(a) correct estimated product 4 000 000 cao	A1

(a) Answer: **4000000**

Question 10

estimate such as 60 x 60 = 3600 or last digit check	M1
Correct	A1

Answer: **Correct**

Question 11

compares the rounded values with the originals (2.6 to 3, 9.1 to 9) or finds the exact value 0.286	M1
An overestimate with correct reason	A1

Answer: **An overestimate**

Question 12

estimate such as 60 x 70 = 4200 or last digit check	M1
Correct	A1

Answer: **Correct**

Question 13

both numbers rounded to 1 significant figure (0.8 and 7)	M1
5.6 cao	A1

Answer: **5.6**

Question 14

compares the rounded values with the originals (7.9 to 8, 3.7 to 4) or finds the exact value 29.230	M1
An overestimate with correct reason	A1

Answer: **An overestimate**

Question 15

estimate such as 100 x 30 = 3000 or last digit check	M1
Correct	A1

Answer: **Correct**

Question 16

both numbers rounded to 1 significant figure (40 and 5)	M1
200 cao	A1

Answer: **200**

Question 17

compares the rounded values with the originals (6.7 to 7, 8.2 to 8) or finds the exact value 0.817	M1
An overestimate with correct reason	A1

Answer: **An overestimate**

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Question 18

rounds to 0.8 and 800	**M1**
0.8 x 800 attempted	**M1**
£640 cao	**A1**

Answer: **£640**

Question 19

4000 cao	**B1**

Answer: **4000**

Question 20

both measurements rounded to 1 s.f. correctly: 3.8 -> 4 and 6.4 -> 6	**M1**
correct estimated area: 4 x 6 = 24	**M1**
correctly state underestimate, since 24 < 24.32 cao	**A1**

Answer: **Estimate 24 m^2; underestimate**

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