1.14 Estimation and Checking: Test Pack

Calculators not allowed · about 55 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Round each number to 1 significant figure.

(a) Round 3 672 to 1 significant figure. **(1)**

(b) Round 0.0489 to 1 significant figure. **(1)**

(c) Round 87 300 to 1 significant figure. **(1)**

(d) Round 0.996 to 1 significant figure. **(1)**

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2 Mel estimates 3.7 x 3.2 by rounding each number to 1 significant figure. Her estimate is 12.
Is her estimate an overestimate or an underestimate? Give a reason.

(2)

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3 One pack of stickers costs £0.67. A school buys 584 packs. Estimate the total cost by rounding each number to 1 significant figure.

(3)

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4 Mel estimates 3.9 x 2.4 by rounding each number to 1 significant figure. Her estimate is 8. Is her estimate an overestimate or an underestimate? Give a reason.

(2)

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5 A school has £6680 to spend on buttons. One pack costs £0.66. Estimate how many packs it can buy, 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 95.2 ÷ 7.8.

(2)

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7 Estimate the value of (2.5 + 2.6) ÷ (2.1 - 3.2) by rounding each number to 1 significant figure.

(3)

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8 By rounding each number to 1 significant figure, estimate the value of 6.1 x 4.7.

(2)

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9 A school has £5080 to spend on buttons. One pack costs £0.56. Estimate how many packs it can buy, by rounding each number to 1 significant figure.

(3)

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10 A shop lists a jacket at £79.99 and a scarf at £8.45. Use 1 significant figure estimates to decide whether a budget of £90 is enough. Show your estimate and a check using the exact total.

(a) Estimate the two prices to 1 significant figure and give the estimated total. **(2)**

(b) Calculate the exact total and say whether £90 is enough. **(2)**

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11 Mel estimates 8.7 ÷ 9.6 by rounding each number to 1 significant figure. Her estimate is 0.9.
Is her estimate an overestimate or an underestimate? Give a reason.

(2)

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12 Mel estimates 5.5 ÷ 6.9 by rounding each number to 1 significant figure. Her estimate is 6/7.
Is her estimate an overestimate or an underestimate? Give a reason.

(2)

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13 Femi says that 78 x 55 = 4300. Use estimation to check, and then work out the correct answer if Femi is wrong.

(2)

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14 Hamza says that 70 x 89 = 6250. Use estimation to check, and then work out the correct answer if Hamza is wrong.

(2)

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15 By rounding each number to 1 significant figure, estimate the value of 18 ÷ 1.2.

(2)

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16 Round 12650 to 1 significant figure, then state whether the rounded value is greater than or less than the exact value.

(2)

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17 Cinema tickets cost £8.95 each. Estimate the total cost of 42 tickets by rounding each number to 1 significant figure, then calculate the exact cost and state whether it is more or less than your estimate.

(3)

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18 Round 0.00815 to 1 significant figure.

(1)

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Mark scheme · 1.14 Estimation and Checking: Test Pack

Question 1

(a) 4 000 cao	B1
(a) Answer: **4000**	
(b) 0.05 cao	B1
(b) Answer: **0.05**	
(c) 90 000 cao	B1
(c) Answer: **90000**	
(d) 1 cao	B1
(d) Answer: **1**	

Question 2

compares the rounded values with the originals (3.7 to 4, 3.2 to 3) or finds the exact value 11.840	M1
An overestimate with correct reason	A1
Answer: **An overestimate**	

Question 3

rounds to 0.7 and 600	M1
0.7 x 600 attempted	M1
£420 cao	A1
Answer: **£420**	

Question 4

compares the rounded values with the originals (3.9 to 4, 2.4 to 2) or finds the exact value 9.360	M1
An underestimate with correct reason	A1
Answer: **An underestimate**	

Question 5

rounds to 7000 and 0.7	M1
7000 ÷ 0.7 attempted	M1
10000 cao	A1
Answer: **10000**	

Question 6

both numbers rounded to 1 significant figure (100 and 8)	M1
12.5 cao	A1
Answer: **12.5**	

Question 7

all numbers rounded to 1 significant figure	M1
correct calculation with rounded values, eg (3 + 3) ÷ (2 - 3)	M1
-6 cao	A1
Answer: **-6**	

Question 8

both numbers rounded to 1 significant figure (6 and 5)	M1
30 cao	A1
Answer: **30**	

Question 9

rounds to 5000 and 0.6	M1
5000 ÷ 0.6 attempted	M1
about 8333 packs (accept 8300 to 8334, or 25000/3 = 8333.3...)	A1
Answer: **About 8333 packs (5000 ÷ 0.6 = 8333.3...)**	

Question 10

(a) both items rounded to 1 s.f. correctly: 79.99 -> 80 and 8.45 -> 8	M1
(a) correct estimated total 88 cao	A1
(a) Answer: **80 and 8; estimate 88**	
(b) correct exact total 88.44	M1
(b) state correctly that £90 is enough cao	A1
(b) Answer: **88.44; yes**	

Question 11

compares the rounded values with the originals (8.7 to 9, 9.6 to 10) or finds the exact value 0.906	M1
An underestimate with correct reason	A1
Answer: **An underestimate**	

Question 12

compares the rounded values with the originals (5.5 to 6, 6.9 to 7) or finds the exact value 0.797	M1
An overestimate with correct reason	A1
Answer: **An overestimate**	

Question 13

estimate such as 80 x 60 = 4800 or last digit check	M1
Incorrect, the correct answer is 4290	A1
Answer: **Incorrect, the correct answer is 4290**	

Question 14

estimate such as 70 x 90 = 6300 or last digit check	M1
Incorrect, the correct answer is 6230	A1
Answer: **Incorrect, the correct answer is 6230**	

Question 15

both numbers rounded to 1 significant figure (20 and 1)	M1
20 cao	A1
Answer: **20**	

Question 16

correct rounding to 1 s.f.: 12650 -> 10000	M1
correctly state that the rounded value (10000) is less than the exact value (12650) cao	A1
Answer: **10000; the rounded value is less than the exact value**	

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Question 17

correct estimate using 1 s.f. values: 9 x 40 = 360	**M1**
correct exact calculation: 8.95 x 42 = 375.90	**M1**
correctly state the exact cost is more than the estimate, since 375.90 > 360 cao	**A1**

Answer: **Estimate 360; exact 375.90; the exact cost is more than the estimate**

Question 18

0.008 cao	**B1**

Answer: **0.008**

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