



KS3.M-N14 Estimation and Checking

AQA KS3.M-N14 · Calculators not allowed · about 60 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)

- 2** Estimate the sum by rounding each number to 1 significant figure, then add your estimates.
 - (a) Estimate $18\,750 + 4\,220$. (3)

- 3** Use 1 significant figure estimates to approximate each product. Round first, then multiply mentally.
 - (a) Estimate $1\,780 \times 2\,450$. (3)

4 Estimate the value of $0.372 + 0.045$ using 1 significant figure then give an appropriate check by computing the exact sum and comparing.

(a) Estimate the sum to 1 s.f. (2)

(b) Calculate the exact sum and say whether the estimate was an overestimate or underestimate. (2)

5 A shop lists a jacket at 79.99 pounds and a scarf at 8.45 pounds. Use 1 significant figure estimates to decide whether a budget of 90 pounds 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 pounds is enough. (2)

6 Round each measurement to 1 significant figure to give an approximate distance.

(a) Round 3.8 km to 1 significant figure. (1)

(b) Round 0.67 km to 1 significant figure. (1)

Mark scheme · KS3.M-N14 Estimation and Checking

Question 1

- (a) **B1** 4 000 cao
- (a) Answer: **4000**
- (b) **B1** 0.05 cao
- (b) Answer: **0.05**
- (c) **B1** 90 000 cao
- (c) Answer: **90000**
- (d) **B1** 1.0 cao
- (d) Answer: **1.0**

Question 2

- (a) **M1** first number rounded to 1 s.f. correctly: 18 750 → 20 000
- (a) **M1** second number rounded to 1 s.f. correctly: 4 220 → 4 000
- (a) **A1** correct estimated total 24 000 cao
- (a) Answer: **24000**

Question 3

- (a) **M1** first number rounded to 1 s.f. correctly: 1 780 → 2 000
- (a) **M1** second number rounded to 1 s.f. correctly: 2 450 → 2 000
- (a) **A1** correct estimated product 4 000 000 cao
- (a) Answer: **4000000**

Question 4

- (a) **M1** both numbers rounded to 1 s.f. correctly, e.g. 0.372 → 0.4 and 0.045 → 0.05
- (a) **A1** a consistent estimate given from the rounded values, e.g. $0.4 + 0.05 = 0.45$ cao
- (a) Answer: **0.45**
- (b) **M1** correct exact sum 0.417
- (b) **A1** correctly state whether estimate is an overestimate or underestimate (here $0.45 > 0.417$ so overestimate) cao
- (b) Answer: **0.417; overestimate**

Question 5

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

Question 6

- (a) **B1** 4 km cao
- (a) Answer: **4 km**
- (b) **B1** 0.7 km cao
- (b) Answer: **0.7 km**