Checking reasonable answers

6 questions | 10 marks

Equivalent correct methods earn the corresponding marks.

1. A student writes 364 × 8 = 29,120. Explain why the answer is unreasonable and find the correct product. [2 marks]

400 × 8 is only 3,200. Calculate 2,400 + 480 + 32 = 2,912.

Answer: It is about ten times too large; the correct product is 2,912.

2. There are 18 boxes with 24 pencils each. Find the total and give an estimate to check it. [2 marks]

18 × 24 = 360 + 72 = 432. A total of 432 is close to 500.

Answer: 432 pencils; for example, estimate 20 × 25 = 500.

3. Check 903 − 487 = 416 using the inverse operation. [1 mark]

487 + 400 + 16 = 903.

Answer: Correct, because 487 + 416 = 903.

4. Which is reasonable for 49 × 21: 1,029 or 10,290? Explain. [2 marks]

50 × 20 = 1,000. Exact calculation is 49 × 20 + 49 = 1,029.

Answer: 1,029

5. Check 936 ÷ 9 = 104. [1 mark]

100 × 9 + 4 × 9 = 900 + 36 = 936.

Answer: Correct, because 104 × 9 = 936.

6. Mia estimates 298 + 403 as 700, then says 690 must be the exact answer because it is close. Is that enough? Find the exact answer. [2 marks]

298 + 400 + 3 = 701. An estimate alone does not confirm an exact value.

Answer: No; the exact answer is 701.