

Long multiplication strategies and estimation

WHAT THIS LESSON TEACHES

Round each factor to a friendly number then multiply the rounded numbers to get a rough idea of how big the answer should be.

→ 412×23 rounds to $400 \times 20 = 8,000$ so the real answer should land near eight thousand.

→ For 412×23 you work 412×3 then 412×20 then add the two rows for the total.

MODEL THIS ON THE BOARD

ESTIMATE THEN MULTIPLY ON SQUARED PAPER

- ① Round 412 to 400 and 23 to 20 then multiply 400×20 to get the estimate of 8,000.
- ② Write $412 \times 3 = 1,236$ as the first row.
- ③ Write $412 \times 20 = 8,240$ as the second row shifted one place left.
- ④ Add the rows to get the exact total and compare it with the estimate.

ANSWER KEY

a) est. $400 \times 30 = 12,000$; 2688 / 7680 / 10368

b) est. $500 \times 40 = 20,000$; 2868 / 14340 / 17208

c) est. $900 \times 50 = 45,000$; 6482 / 37040 / 43522

Q1: 14,337

Q2: 8,760

Q3: 33,264

Q4: 23,635

Q5: 18,928

a) Never — The estimate is only close not exact.

b) Always — The estimate warns when the working is far smaller than expected.

c) Never — You round to the nearest friendly number which may be up or down.

d) Always — The estimate only gives a rough guide.

EXTENSION SHEET · STRETCH ANSWERS

S1: 3475

S2: 7479