ESTIMATE ANSWERS TO CALCULATIONS

BUILDING BLOCKS

NAME _____ CLASS _____ DATE _____

KEY IDEA

To estimate, round the numbers so they are easy, then work it out.

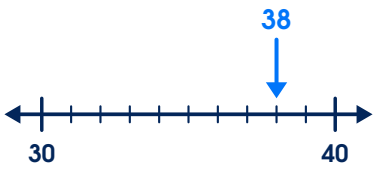
≈ means 'is approximately equal to'.

49 + 31 → round → 50 + 30 → work out → ≈ 80

19 × 4 → round → 20 × 4 → work out → ≈ 80

1 Round each number to the nearest 10. Then estimate the answer.

a)



→ ☐

b)



→ ☐

So 38 + 21 ≈ ☐ + ☐ = ☐

2 Use the fact to help you work out each calculation.

3 × 4 = 12 ← use this fact

8 ÷ 2 = 4 ← use this fact

a) 30 × 4 = ☐

b) 30 × 40 = ☐

c) 80 ÷ 2 = ☐

d) 800 ÷ 20 = ☐

3 A drink costs £1.98. Estimate the cost of 4 drinks.



£1.98 ≈ £ ☐

4 drinks ≈ 4 × £ ☐ = £ ☐

4 Circle the best estimate for each calculation. Then work it out.

a) 52 × 3 — 50 × 3 | 60 × 3 | 52 × 30 = ☐

b) 89 + 42 — 80 + 40 | 90 + 40 | 89 + 40 = ☐

ESTIMATE ANSWERS TO CALCULATIONS

SUPPORT

NAME _____ CLASS _____ DATE _____

KEY IDEA

Round each number to 1 significant figure, then calculate.

62 × 4.8 → round → 60 × 5 → work out → ≈ 300

Round up → overestimate (too big)

Round down → underestimate (too small)

1 Estimate the answer to each calculation. Round each number to 1 significant figure.

a) 712 + 189 ≈ ☐ + ☐ = ☐

b) 58 × 21 ≈ ☐ × ☐ = ☐

c) 8.7 × 3.2 ≈ ☐ × ☐ = ☐

d) 395 ÷ 19 ≈ ☐ ÷ ☐ = ☐

2 Is each estimate an overestimate or an underestimate? Circle your answer.

a) 48 × 19 ≈ 50 × 20 — OVERESTIMATE / UNDERESTIMATE

b) 61 + 82 ≈ 60 + 80 — OVERESTIMATE / UNDERESTIMATE

c) 3.2 × 41 ≈ 3 × 40 — OVERESTIMATE / UNDERESTIMATE

3 Draw a line to match each calculation to its estimate.

4.9 × 61	30
297 ÷ 9.8	400
3.2 × 89	300
612 – 189	270

4 Kim works out 23 × 47 = 1081. She says, "My estimate is 1081."

a) Explain why this is not an estimate.

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b) Write a good estimate for 23 × 47 and show how you got it. ☐

ESTIMATE ANSWERS TO CALCULATIONS

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

Round each number to 1 significant figure and calculate. For a square root, use the nearest square number instead ($\sqrt{63} \approx \sqrt{64} = 8$). Ask yourself whether the estimate is an overestimate or an underestimate.

FLUENCY

1 Estimate the answer to each calculation.

a) 6.8×41 ≈ ☐

b) $783 \div 39$ ≈ ☐

c) 0.52×386 ≈ ☐

d) 9.7^2 ≈ ☐

e) $\sqrt{63}$ ≈ ☐

f) $(21.4 + 38.9) \div 2.9$ ≈ ☐

2 Estimate each answer. Is your estimate an overestimate or an underestimate?

a) 29×7.6 ≈ ☐ OVERESTIMATE UNDERESTIMATE

b) $4213 - 1870$ ≈ ☐ OVERESTIMATE UNDERESTIMATE

REASONING

3 Here are four ways to estimate 34.8×19.6

A 35×20 B 30×20 C 30×19.6 D 40×20

a) Which estimate is closest to the exact answer? ☐

b) Which estimates are overestimates? Explain how you know. ☐

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4 Ana works out $4.9 \times 21 = 1029$. Use an estimate to explain why Ana must be wrong.

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ESTIMATE ANSWERS TO CALCULATIONS

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

1 Is each statement always, sometimes or never true? Circle your answer.

If it is sometimes true, give an example of when it is true and when it is not.

a) Adding two numbers rounded up gives an overestimate. ALWAYS SOMETIMES NEVER

b) For a – b, rounding a and b up gives an overestimate. ALWAYS SOMETIMES NEVER

c) An estimate is equal to the exact answer. ALWAYS SOMETIMES NEVER

d) Squaring a number rounded up gives an overestimate. ALWAYS SOMETIMES NEVER

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PROBLEM SOLVING

2 Estimate the answer to each calculation. Show your working.

a) $(48.3 \times 9.7) \div 0.51$ ≈ ..... = ☐

b) $\sqrt{(8.1^2 + 5.9^2)}$ ≈ ..... = ☐

3 Write a number in each box so that each estimate is sensible.

a) ☐ × 19.8 ≈ 600

b) 2970 ÷ ☐ ≈ 50

c) √☐ ≈ 7

★ CHALLENGE FOR ALL

4 Round each number to 1 significant figure to estimate.

a) Estimate the number of seconds in a year (365 days). ☐

b) The exact answer is 31 536 000. Is your estimate an over- or underestimate?

OVERESTIMATE UNDERESTIMATE

c) Which rounding made the biggest difference? Explain.

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ESTIMATE ANSWERS TO CALCULATIONS – ANSWERS

ANSWERS

BUILDING BLOCKS

Q1 a) 40 · b) 20 · 38 + 21 ≈ 40 + 20 = 60

Q2 a) 120 · b) 1200 · c) 40 · d) 40

Q3 £1.98 ≈ £2 · 4 drinks ≈ 4 × £2 = £8

Q4 a) 50 × 3 = 150 · b) 90 + 40 = 130

SUPPORT

Q1 a) 700 + 200 = 900 · b) 60 × 20 = 1200 · c) 9 × 3 = 27 · d) 400 ÷ 20 = 20

Q2 a) overestimate (both rounded up) · b) underestimate (both rounded down) · c) underestimate

Q3 4.9 × 61 → 300 · 297 ÷ 9.8 → 30 · 3.2 × 89 → 270 · 612 − 189 → 400

Q4 a) 1081 is the exact answer; an estimate uses rounded numbers to get a close, easy answer · b) 20 × 50 = 1000

CORE

Q1 a) 7 × 40 = 280 · b) 800 ÷ 40 = 20 · c) 0.5 × 400 = 200 · d) $10^2 = 100$ · e) $\sqrt{64} = 8$ · f) (20 + 40) ÷ 3 = 20

Q2 a) 30 × 8 = 240, overestimate (both rounded up) · b) 4000 − 2000 = 2000, underestimate (4213 rounded down and 1870 rounded up)

Q3 a) A (700; exact 682.08) · b) A and D: 35 and 20 are both bigger than 34.8 and 19.6 (and D is bigger still)

Q4 4.9 × 21 ≈ 5 × 20 = 100, so 1029 is about ten times too big (exact 102.9)

GREATER DEPTH

Q1 a) Always · b) Sometimes: 65 − 18 ≈ 70 − 20 = 50 > 47, but 76 − 25 ≈ 80 − 30 = 50 < 51 · c) Sometimes: 40 × 20 = 800 exactly, 41 × 20 ≈ 800 is not · d) Always (for positive numbers)

Q2 a) 50 × 10 ÷ 0.5 = 1000 · b) $\sqrt{(8^2 + 6^2)} = \sqrt{100} = 10$

Q3 a) about 30 · b) about 60 · c) about 49 (accept 45 to 55)

Q4 a) 400 × 20 × 60 × 60 = 28 800 000 · b) underestimate · c) 24 → 20: it went down by 4 out of 24 (about a sixth); 365 → 400 only went up by about a tenth