JUNIOR CYCLE MATHS · FREE REVISION SHEET

Decimals, rounding & estimation

↗ Léim

Learning outcomes (2018 specification): N.1e, N.2a. Play the game: **leim.ie/round-it.html**

1. Place value

Tens	Units	.	Tenths	Hundredths	Thousandths
2	5	.	4	7	3

In 25.473 the 7 is worth **0.07**. To compare decimals, give them the same number of places: 0.5 = 0.50 > 0.45.

2. × and ÷ by 10, 100, 1000

The digits move one place for every zero: **left** for × (bigger), **right** for ÷ (smaller). 3.47 × 100 = **347**; 3.47 ÷ 100 = **0.0347**.

3. Fractions ↔ decimals

1/2 = 0.5 · 1/4 = 0.25 · 3/4 = 0.75 · 1/5 = 0.2 · 1/8 = 0.125 · 1/10 = 0.1. Decimal → fraction: 0.35 = 35/100 = **7/20**.

4. Decimal sums

+ − line up the points (7 − 2.35 → 7.00 − 2.35 = 4.65). **×** multiply without the points, then count the places: 0.3 × 0.4 = **0.12**. **÷** make the divisor whole: 4.8 ÷ 0.6 = 48 ÷ 6 = **8**.

5. Rounding

Find the last digit you keep. Look at the **next** digit: **5 or more** round up, **less than 5** leave it. Fill whole-number gaps with zeros.

6.2849 to…	
nearest whole number	**6**
1 decimal place	**6.3**
2 decimal places	**6.28**
3 significant figures	**6.28**

Significant figures: count from the first digit that isn't zero. 0.004637 to 2 s.f. = **0.0046**; 48372 to 2 s.f. = **48000**.

6. Estimate first

Round every number to **1 significant figure**: 4.87 × 21.3 ≈ 5 × 20 = **100**. If your answer is about 10 times too big or small, check the decimal point.

Round at the end, not the middle: 4.56 × 2.34 = 10.6704 → **10.7**. Rounding first (4.6 × 2.3 = 10.58) gives 10.6: wrong.

Exam tip: read the instruction twice. Decimal places and significant figures are different (0.04637: 2 d.p. = 0.05, 2 s.f. = 0.046). Money always has 2 decimal places: €9.80, not €9.8. When the question says "estimate", write the rounded sum down.

PRACTICE · 34 QUESTIONS

Have a go

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A. Place value

1. What is the value of the 6 in 15.068? _____
2. Put in order, smallest first: 0.6, 0.06, 0.66, 0.606 _____
3. 4.7 × 100 = _____
4. 52 ÷ 1000 = _____
5. Write 3/8 as a decimal. _____
6. Write 0.45 as a fraction in its simplest form. _____

B. Rounding

7. 7.4682 to 1 decimal place _____
8. 7.4682 to 2 decimal places _____
9. 38516 to the nearest hundred _____
10. 38516 to the nearest thousand _____
11. 0.03072 to 2 significant figures _____
12. 6047 to 2 significant figures _____
13. 19.996 to 2 decimal places _____
14. 12.95 to the nearest whole number _____

C. Decimal sums (no calculator)

15. 14.6 + 3.85 = _____
16. 9 − 4.27 = _____
17. 23.4 − 8.76 = _____
18. 0.7 × 0.6 = _____
19. 2.35 × 4 = _____
20. 1.2 × 0.03 = _____
21. 6.3 ÷ 0.7 = _____
22. 4.5 ÷ 0.09 = _____

D. Estimate by rounding each number to 1 significant figure

23. 6.8 × 3.12 ≈ _____
24. 48.7 × 0.21 ≈ _____
25. 812 ÷ 39.6 ≈ _____
26. 0.58 × 0.92 ≈ _____
27. 41.3 ÷ 0.48 ≈ _____
28. €2.95 × 19 ≈ _____
29. Which is the right answer to 3.9 × 52.1?
    2.0319 · 20.319 · 203.19 · 2031.9 _____
30. Estimate 7.8 × 7.8 _____

Questions 31–34 are on the next page.

EXAM-STYLE · THEN CHECK

Exam corner + answers

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E. Exam-style questions (show your work)

31. A litre of paint covers 11.5 m². A wall has an area of 38.2 m². (a) How many litres are needed, correct to 1 decimal place? (b) Paint is sold in 1-litre tins. How many tins must be bought?

32. Aoife's phone plan costs €12.50 a month plus 9c for every text after the first 100. In May she sends 163 texts. How much is her bill?

33. Jack's long-jump results (in metres) are 4.27, 3.86, 5.12 and 4.9. Find the mean, correct to 2 decimal places.

34. Apples cost €2.15 per kg. (a) Estimate the cost of 3.8 kg. (b) Work out the exact cost. Is it reasonable?

Answers

A	1. 0.06 · 2. 0.06, 0.6, 0.606, 0.66 · 3. 470 · 4. 0.052 · 5. 0.375 · 6. 9/20
B	7. 7.5 · 8. 7.47 · 9. 38500 · 10. 39000 · 11. 0.031 · 12. 6000 · 13. 20.00 · 14. 13
C	15. 18.45 · 16. 4.73 · 17. 14.64 · 18. 0.42 · 19. 9.4 · 20. 0.036 · 21. 9 · 22. 50
D	23. 7 × 3 = 21 · 24. 50 × 0.2 = 10 · 25. 800 ÷ 40 = 20 · 26. 0.6 × 0.9 = 0.54 · 27. 40 ÷ 0.5 = 80 · 28. €3 × 20 = €60 · 29. 203.19 (estimate 4 × 50 = 200) · 30. 8 × 8 = 64
E	31. (a) 38.2 ÷ 11.5 = 3.32… = **3.3 litres** (b) **4 tins** (3 isn't enough) · 32. 63 × €0.09 = €5.67, so €12.50 + €5.67 = **€18.17** · 33. 18.15 ÷ 4 = 4.5375 = **4.54 m** · 34. (a) 4 × €2 = **€8** (b) **€8.170**, close to €8, so yes

Got one wrong? Check: did you look at the **next** digit when rounding? Did you keep zeros as place holders (38500, not 385)? Did you count the decimal places when multiplying? Did you round too early? Then play **Round It** at leim.ie/round-it.html: the "Go back over these" list at the end shows the rule for each mistake.

All questions written by Léim. Léim is independent and not connected with the State Examinations Commission or the NCCA.