

Estimate the answer to a calculation

- 1 Circle the most appropriate calculation to use to estimate the answer to each multiplication.

- a) 41×34 30×30 40×30 40×40 50×30
- b) 68×74 70×70 60×70 70×80 50×70
- c) 8.7×52 8×50 9×50 10×50 10×60
- d) 31×275 30×270 30×275 30×280 30×300

- 2 Teddy is working out 37×68



I'm going to round both numbers to 1 significant figure to get an estimate first.

- a) Complete Teddy's workings.

37 to 1 significant figure = 40

68 to 1 significant figure = 70

So $37 \times 68 \approx$ 40 $\times$ 70 = 2800

- b) Will this estimate be smaller than or greater than the actual answer to 37×68 ? Smaller

Explain how you know.

37 and 68 both rounded up to 1 sig fig so 2800 is an overestimate.

- c) Use your calculator to work out 37×68 to check your answer.
Discuss the answer with a partner and how it compares to your estimate.

3

$\rightarrow 33 \approx 30$

33 children are going to Kim's birthday party.
Her mum buys some treats for all the children.
Estimate the cost of buying each item.

a)



$$30 \times 50p = 1,500p = \text{£}15$$

approximate cost = £ 15

b)



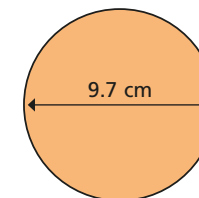
$$30 \times 80p = 2,400p = \text{£}24$$

approximate cost = £ 24

4

Esther is using a calculator to work out the area of the circle.

She gets this answer.



- a) Explain how you know Esther's answer must be wrong.

$d \approx 10$ so $r \approx 5$ and $r^2 \approx 25$. πr^2 must therefore be greater than 25

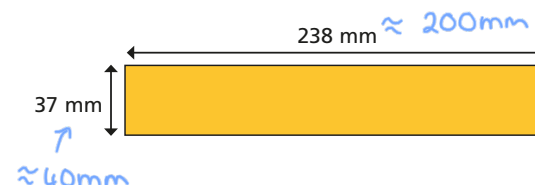
- b) Use $\pi = 3$ to estimate the circumference of the circle.

$$C = \pi d \quad d \approx 10 \quad 3 \times 10 = 30$$

30 cm

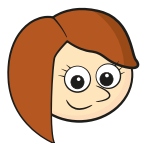
5

Estimate the area of the rectangle.



8000 mm^2

- 6 Rosie is working out $5,624 \div 1.9$



I'm going to round both numbers to one significant figure to get an estimate first.

Complete Rosie's workings.

$5,624$ to 1 significant figure = $6,000$

1.9 to 1 significant figure = 2

So $5,624 \div 1.9 \approx 6,000 \div 2 = 3,000$

- 7 Estimate the answers to the divisions. Show your workings.

a) $487 \div 5.1 \approx 500 \div 5$ $625 \div 2.8 \approx 600 \div 3$ $8,450 \div 7.9 \approx 8,000 \div 8$

b) $7,695 \div 4.2 \approx 8,000 \div 4$ $7,695 \div 42 \approx 8,000 \div 40$ $7,695 \div 420 \approx 8,000 \div 400$

$2,000$ 200 20

- 8 To estimate the answer to $238 \div 2.99$, I'm going to round 238 to 240 instead of 200



Explain why Ron's strategy is a good one.

- 9 a) Filip has not got his calculator. He needs to estimate the square root of 78. Complete his workings.

$78 > 64$, so $\sqrt{78} > 8$

$78 < 81$, so $\sqrt{78} < 9$

So $\sqrt{78}$ is between 8 and 9

- b) Use Filip's method to work out two consecutive integers between which these roots lie.

$\sqrt{19}$ is between 4 and 5

$\sqrt{50}$ is between 7 and 8

$\sqrt{110}$ is between 10 and 11

- 10 Work out estimates for the answers to the calculations.

a) $\frac{47 \times 29}{209} \approx \frac{50 \times 30}{200} = \frac{1500}{200} = \frac{15}{2} = 7.5$

c) $\frac{193^2}{9.23 - 4.812} \approx \frac{200^2}{9 - 5} = \frac{40000}{4} = 10,000$

e) $\frac{3,175 + 6,842}{2.2 \times 4.9} \approx \frac{3000 + 7000}{2 \times 5} = \frac{10000}{10} = 1,000$

b) $\frac{47 \times 29}{2,090} \approx \frac{50 \times 30}{2000} = \frac{1500}{2000} = \frac{3}{4} = 0.75$

d) $\frac{32 \times 59}{61 \times 29} \approx \frac{30 \times 60}{60 \times 30} = 1$

f) $\frac{86 \times 91}{0.51} \approx \frac{90 \times 90}{0.5} = \frac{8100}{0.5} = 8100 \times 2 = 16,200$