Number – Worked Answers

1. Saudi Arabia has about 36 billion m^3 of oil reserves. The rest of the world has about 198 billion m^3. What fraction of the reserves does Saudi Arabia have?

36 + 198 = 234 total.	Must be out of **total** amount
36 out of 234 = $\frac{36}{234}$	Amount on top, total on bottom
Saudi Arabia's share is $\frac{2}{13}$	Calculator will simplify

2. Judging by the censuses, approximately $\frac{2}{37}$ people in NZ belong to a non-Christian religion. If the population is now 4,380,000, how many would be expected to be non-Christian?

4,380,000 × $\frac{2}{37}$ = 236,756.75	A fraction **of** something, we **multiply**
Approx 236,800 to be non-Christian	Approximate fraction so round sensibly

3. In the last census NZ had 4,027,947 people recorded, of which 2,027,418 registered as Christian. What is this as a percentage?

$\frac{2027418}{4027947}$ = 2,027,418 ÷ 4,027,947 = 0.503338	Generate as a fraction out of a total
0.503338 (× $\frac{100}{1}$) = 50.3338%	A percentage is out of 100
50.33% were Christian	Round to 3 or 4 significant figures

4. In the last census NZ had 4,027,947 people recorded. Of them 12.62% identified as Roman Catholics. How many Roman Catholics were there?

12.62% = $\frac{12.62}{100}$	A percentage is a fraction of 100
$\frac{12.62}{100}$ × 4027947 = 508326.91	To find a % **of** something, **multiply**
There were 508,327	People cannot be fractional, so round

5. In 2001 the number of Sikhs in NZ was 5,199. By 2006 it had increased by 83%. How many were there in 2006?

83% = $\frac{83}{100}$ $\frac{83}{100}$ × 5199 = 4315.17	To find a % **of** something, **multiply**
5199 + 4315.17 = 9514.17	83% **increase**, so add to the start
NZ had 9,514 Sikhs in 2006	No fractional people, so we round

Or we could do in one step as 1.83 × 5199 = 9514

6. In some parts of the US ethanol can be added to petrol in the ratio of up to 1 : 17. If you have 5 litres of ethanol, at least how much petrol must it be mixed with?

We are scaling up by 5× for the ethanol	Find the multiplier of the known side
5 × 17 = 85	Multiply the other side yoo
Need at least 85 L of petrol	Answer question asked

7. In NZ the ratio of believers : non-believers is about 7 : 3. If there are about 4,380,000 people, approximately how many non-believers are there?

7 parts believer + 3 parts non- = 10 parts	How many "shares" are there in **total**
10 parts = 4,380,000, so each "part" is 438,000	Find the scale factor for the totals
3 × 438,000 = 1,314,000	Multiply the required ratio by the scale
There are about 1,314,000 non-believers	Answer question asked

8. Each pack of nine marbles contains two special marbles (to mark the shooters). If there are 250 special marbles, how many normal marbles are needed?

2 out of every 9 means ratio 2 : 7	
2 × 125 = 250 and 7 × 125 = 1050	So we are scaling up by 125 ×
1050 normal marbles	Answer question asked

Or we could work out that $\frac{2}{9}$ were special and work from there

9. The barrel is a unit used in the oil industry. One barrel equals 0.159 cubic metres (m^3). How many m^3 of oil are there in an oil super-tanker which can carry 3,000,000 barrels?

1 barrel = 0.159 m^3	Conversion rate to 1
3,000,000,000 × 0.159	Barrel is larger, so answer is smaller
477,000 m^3	

10. One gram = 0.035 ounces. How much does a 1½ -ounce marble weigh in grams?

1 gram = 0.035 ounces	Conversion rate = 1 to 0.035
1.5 ÷ 0.035	gram is smaller, so answer is larger
42.86 grams	Round sensibly