1) Use the facts at the top of the table to help you complete the other calculations:

16 × 20 = 320	42 × 5 = 210
16 × 200 = _____	420 × 5 = _____
20 × 160 = _____	50 × 42 = _____
160 × 200 = _____	4200 × 50 = _____

450 ÷ 25 = 18	8600 ÷ 200 = 43
4500 ÷ 25 = _____	860 ÷ 20 = _____
4500 ÷ 250 = _____	8600 ÷ 2 = _____
2250 ÷ 25 = _____	860 ÷ 43 = _____

2) Zara says that she needs to use a formal long multiplication method to complete the calculation 72 × 50.

Can you find 3 different methods that she could use other than a formal method, using your knowledge of mental strategies?

1) Cleo has been given this fact:
   7800 ÷ 30 = 260

   She has been asked to solve the calculation
   7800 ÷ 3.

   She says that, because 3 is 10 times
   smaller than 30, the answer must
   be 10 times smaller too, so
   7800 ÷ 3 must be 26.

   Cleo is incorrect. Explain why.

2 a) 150 × 25 = 15 × 250
     Prove it!

  b) Write down 3 of your own equivalent
     calculations similar to the one above.

1) In the calculation below, each
   square represents a missing digit.
   Find 5 possible solutions to make the
   statement correct.

   You cannot use commutativity (just swapping the order of
   the numbers), such as 40 × 320 = 320 × 40.

   ☐0 × ☐☐0 = ☐☐0 × ☐0

2) In the calculation below, each square represents a missing
   digit. Find 5 possible solutions to make the statement correct.

   ☐☐0 ÷ ☐0 = ☐☐0 ÷ ☐0

ANSWERS

1)

$16 \times 20 = 320$	$42 \times 5 = 210$	$450 \div 25 = 18$	$8600 \div 200 = 43$
$16 \times 200 = \mathbf{3200}$	$420 \times 5 = \mathbf{2100}$	$4500 \div 25 = \mathbf{180}$	$860 \div 20 = \mathbf{43}$
$20 \times 160 = \mathbf{3200}$	$50 \times 42 = \mathbf{2100}$	$4500 \div 250 = \mathbf{18}$	$8600 \div 2 = \mathbf{4300}$
$160 \times 200 = \mathbf{32\ 000}$	$4200 \times 50 = \mathbf{210\ 000}$	$2250 \div 25 = \mathbf{90}$	$860 \div 43 = \mathbf{20}$

2) Methods should include the following:

- $72 \times 100 = 7200$
  $7200 \div 2 = 3600$

- $72 \times 5 = 360$ (Children might partition 72 as an intermediate step: $(70 \times 5) + (2 \times 5)$.)
  $360 \times 10 = 3600$

- $72 \times 10 = 720$
  $720 \times 5 = (720 \times 10) \div 2 = 3600$
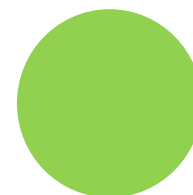
1) Because the divisor (the number that she is dividing by) is ten times smaller, the quotient (the answer to her division) will be ten times greater. Cleo should have recognised her error by checking her answer using the inverse $(26 \times 3 < 7800)$.

2) a) When multiplying, if you make one of the factors (numbers that are being multiplied) ten times smaller and the other ten times greater, this creates an equivalent calculation. This means that the calculations have the same value.

$$150 \times 25 = 15 \times 250 = 3750$$

b) Here are some possible answers:

$$23 \times 250 = 230 \times 25$$
$$1600 \times 200 = 16000 \times 20$$
$$570 \times 50 = 57 \times 500$$

1) Possible answers include the following:

$$40 \times 320 = 640 \times 20$$
$$30 \times 150 = 450 \times 10$$
$$60 \times 400 = 800 \times 30$$
$$50 \times 200 = 500 \times 20$$
$$30 \times 600 = 200 \times 90$$

2) Possible answers include the following:

$$320 \div 40 = 160 \div 20$$
$$500 \div 50 = 100 \div 10$$
$$460 \div 20 = 230 \div 10$$
$$900 \div 30 = 300 \div 10$$
$$800 \div 80 = 400 \div 40$$