

**Level 19 Card 1** All times tables should be known x2 – x12

**1. Write in words:**

- a) 23, 567
- b) 652,190
- c) 130, 911
- d) 965, 040

**2. Write in figures:**

- a. Three hundred and six thousand and seventeen
- b. Nine hundred and twenty-two thousand and four
- c. Thirty thousand, one hundred and twelve
- d. Nine hundred and sixty thousand, two hundred and twenty-two

**3. Write in expanded form**

Example: 796,421 in expanded form is:

$796,421 = 700000 + 90000 + 6000 + 400 + 20 + 1$

- a)  $786,132 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
- b)  $637,895 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
- c)  $465,312 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
- d)  $439,780 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$

**Level 19 Card 2**

**1. The Commutative Law** is the law of *order*. It works for addition and multiplication but not for division and subtraction. We can swap numbers over and still get the same answer. Example:

$47 + 86 = 133$  and  $86 + 47 = 133$  (addition)

$2 \times 4 \times 5 = 40$  and  $4 \times 5 \times 2 = 40$  (multiplication)

Write these another way so that you still get the same answer:

- a)  $6 + 7 = \square$  and  $\square + \square = \square$
- b)  $12 + 6 = \square$  and  $\square + \square = \square$
- c)  $8 \times 7 \times 5 = \square$  and  $\square \times \square \times \square = \square$
- d)  $12 \times 4 \times 9 = \square$  and  $\square \times \square \times \square = \square$

**2. The Associative Law** is the *grouping* law. It doesn't matter how we group the numbers, when we add or multiply.

Example:

$(6 + 4) + 5 = 15$  and  $6 + (4 + 5) = 15$  (addition)

$(3 \times 2) \times 8 = 48$  and  $2 \times (3 \times 8) = 48$  (multiplication)

Write these another way:

- a)  $2 + (4 + 5) = \square$  and  $(\square + \square) + \square = \square$
- b)  $(3 \times 4) \times 5 = \square$  and  $\square \times (\square \times \square) = \square$
- c)  $8 \times (4 \times 3) = \square$  and  $(\square \times \square) \times \square = \square$

## Level 19 Card 3

### 1. The Distributive Law

#### Example:

$846 \times 8$  - We multiply every part of 846 by 8 ...

$$(800 + 40 + 6) \times 8$$

$$= (800 \times 8) + (40 \times 8) + (6 \times 8)$$

$$= 6400 + 320 + 48$$

$$= 6000 + (400 + 300) + (20 + 40) + 8$$

$$= 6768$$

#### Work these out the same way:

a)  $729 \times 6$

b)  $356 \times 9$

c)  $438 \times 4$

d)  $739 \times 7$

e)

### 2. Number facts – Work out these in your head!

a)  $4 + 7 =$

$$24 + 7 =$$

$$564 + 7 =$$

b)  $4 + 7 =$

$$40 + 70 =$$

$$400 + 700 =$$

## Level 19 Card 4

### 1. Finish the counting:

a) 10, 1, 9, 2, 8, 3, \_\_, \_\_, \_\_, \_\_, \_\_, \_\_, \_\_, \_\_

b) .25, 5.0, 7.5, 1.00, 1.25, \_\_, \_\_, \_\_, \_\_, \_\_

### 2. Keep on doubling:

a) .25, .50, \_\_, \_\_, \_\_, \_\_, \_\_, \_\_, \_\_

b)  $\frac{2}{5}$ ,  $\frac{4}{5}$ ,  $1\frac{3}{5}$ , \_\_, \_\_

### 3. Keep on halving:

a) 4, \_\_, \_\_, \_\_, \_\_, \_\_, \_\_, \_\_

b)  $2\frac{8}{10}$ ,  $1\frac{4}{10}$ , \_\_

### 4. Factors

Write all the factors of: a) 8 b) 9 c) 12

### 5. Prime numbers

A prime number is a whole number with exactly two factors, itself and 1. Examples:

The number 5 is a prime number because it cannot be divided evenly by any other numbers except for 5 and 1.

The number 4 is not a prime number because it can be divided evenly by 4, 2, and 1.

Make a list of all the prime numbers from 1 to 41.

### 6. Count by ordinal numbers from 20<sup>th</sup> to 30<sup>th</sup>.

## Level 19 Card 5

### Place value of decimals

T H O U S A N D S	H U N D R E D S	T E N S	O N E S	D E C I M A L · L I N E	T E N T H S	H U N D R E D T H S	T H O U S A N D T H S
1000	100	10	1	·	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$

Draw up a place value chart like this one. Now write these numbers in the place value chart in the right columns:

1. 72, 547.6      b) 84.073      c) 102.45      d) .87  
 e) 5.9076      f) 73.0006      g) 109.642      h) 0.0001  
 i) 7.0853      j) 1672.001      k) 2.5      l) 908.75

Write as fractions, e.g.  $0.003 = \frac{3}{1000}$

- a) 0.4      b) 21.092      c) 1.2345      d) 78.25      e) 590.1

## Level 19 Card 6

### Decimals

1. Arrange these decimals in ascending order:

- a) 0.2, 0.5, 0.1, 0.3 \_\_\_\_ , \_\_\_\_ , \_\_\_\_  
 b) 0.2, 0.23, 0.02 \_\_\_\_ , \_\_\_\_ , \_\_\_\_  
 c) 0.6, 0.06, 0.16 \_\_\_\_ , \_\_\_\_ , \_\_\_\_  
 d) 2.6, 0.62, 0.26 \_\_\_\_ , \_\_\_\_ , \_\_\_\_  
 e) 0.7, 0.76, 0.07 \_\_\_\_ , \_\_\_\_ , \_\_\_\_

2. Arrange these decimals in descending order:

- a) 0.3, 0.6, 0.4, 0.1 \_\_\_\_ , \_\_\_\_ , \_\_\_\_ , \_\_\_\_  
 b) 4.5, 4.05, 5.4 \_\_\_\_ , \_\_\_\_ , \_\_\_\_  
 c) 2.7, 2.74, 2.47 \_\_\_\_ , \_\_\_\_ , \_\_\_\_  
 d) 5.07, 7.05, 0.57 \_\_\_\_ , \_\_\_\_ , \_\_\_\_  
 e) 11.11, 11.01, 11.1 \_\_\_\_ , \_\_\_\_ , \_\_\_\_

**3. Addition of decimals.** Set these out first

- a)  $7.35 + 16.025 + 124.3$   
 b)  $0.86 + 76.3 + 126.025$   
 c)  $9.75 + 54.096 + 1000.1$

### Level 19 Card 7

**1. Addition of decimals.** Set these out first.

- a)  $48.39 + 26.29$
- b)  $35.78 + 36.28$
- c)  $\$343.56 + \$448.67$
- d)  $29.23\text{m} + 23.73\text{m} + 12.36\text{m}$
- e)  $\$29.37 + \$30.38$
- f)  $432.29\text{ kg} + 364.57\text{kg} + 496.87\text{kg}$
- g)  $\$164.73 + \$237.38 + \$18.96 + \$338.70$

**2. Subtraction of decimals.** Set these out first.

- 1.  $0.7 - 0.4 =$
- 2.  $0.9 - 0.6 =$
- 3.  $1.2 - 0.7 =$
- 4.  $3.3 - 0.9 =$
- 5.  $1.1 - 0.5 =$
- 6.  $57.28 - 29.58 =$
- 7.  $94.32 - 29.38 =$
- 8.  $\$732.26 - \$43.75 =$

### Level 19 Card 8

Multiplication of decimals

**1. Multiply by 10**

Example: Find  $10 \times 0.49 = ?$

Solution: Move the decimal point one step to the right.

$$10 \times 0.49 = 04.9 \text{ (remove zero)} = 4.9$$

- a)  $10 \times 0.89 =$
- b)  $10 \times 1.589 =$
- c)  $10 \times 50.37 =$
- d)  $10 \times 398.56 =$

**2. Multiply by 100**

Example: Find  $100 \times 2.65 = ?$

Solution: Move the decimal point two steps to the

right. Answer: 265

- a)  $100 \times 34.87 =$
- b)  $100 \times 3.255 =$
- c)  $100 \times 600.49 =$
- d)  $100 \times 4976.09 =$

## Level 19 Card 9

### Multiplication of decimals

#### Multiply by 1000

Move the decimal point 3 steps.

Example:  $1000 \times 0.043 = 43$

Multiply these decimals by 1000:

a)  $1000 \times 0.23 =$

b)  $1000 \times 2.34 =$

c)  $1000 \times 0.003 =$

d)  $1000 \times 14.02 =$

#### Division of decimals

Set these out first:

a)  $9.1 \div 7 =$

b)  $72.5 \div 5 =$

c)  $7.8 \div 2 =$

d)  $62.32 \div 4 =$

e)  $43.17 \div 3 =$

f)  $98.6 \div 6 =$

g)  $10.05 \div 5 =$

h)  $42.01 \div 8 =$

i)  $90.02 \div 3 =$

j)  $725.1 \div 2 =$

## Level 19 Card 10

### Practical Problems

1. Mr Josefa bought 10 pigs, 8 goats and 15 sheep.

The pigs cost \$30 each. The goats cost \$10 each and the sheep cost \$15 each. How much did he pay altogether?

2. Mary has a \$5 note. She exchanges it with her brother Sam for some coins worth \$5. What is the largest number of coins that Sam can have given Mary?

3. Georgia has \$5. She buys a nut bar for \$1.10. How much change does she get?

4. Aria has \$10. She gets \$4.60 change after buying a packet of rice biscuits. How much do the biscuits cost?

5. Oliver pays for \$1.10 for two apples. He gets 90 cents change. How much money did he give to the person at the checkout?

6. Ben has a box with a number in it that is greater than 7. Moana has a box with a number in it that is less than 9. Tom has a box with a number in it that is greater than 5. They all have the same number. What is it?

## Level 19 Card 11

### 1. Addition

- a) What is the total of the following numbers?

$$345,268 + 459 + 69 + 72,839 + 6,423$$

- b) Find the sum of 127,456 and 17,847  
c) To the sum of 414,940 *and* 150,055, *add the sum of* 190,099 *and* 330,013  
d) In a town there are 169,874 men, 137,689 women and 43,847 children. What is the town's population?  
e) What is 268,789 more than 187,964?

### 2. Subtraction

- a) 4,567 is  $\square$  less than 732,456?  
b) 346,914 is  $\square$  more than 247,907?  
c) Subtract 210,568 from 864,279  
d) Subtract 824 from 1 million  
e) What is 4890 less than 1 million?

### 3. Problem solving

- a) Bill working out Bill's name in numbers.

If  $A = 1a$ ,  $B = 2a$ ,  $C = 3a$ ,  $D = 4a$ ,  $E = 5a$ ,  $F = 6a$ ,  $G = 7a$  and so on, the value of Bill's name is  $2a + 9a + 12a + 12a = 40a$ .

What is the value of your name? Write it as an equation.

- b) Some octopuses, fish and crabs are in a rock pool. Altogether there are 56 arms, 5 tails and 30 legs in the pool. How many of each animal?

## Level 19 Card 12

### Percentages %

A percentage (%) is the fraction "one hundredth" or  $1/100$ .

So, 1 % of 100 = 1

Let's learn these:

$$25\% = \frac{25}{100} = \frac{1}{4} \quad 50\% = \frac{50}{100} = \frac{1}{2} \quad 75\% = \frac{75}{100} = \frac{3}{4}$$

- a) There are 200 children in a school. 50% are girls. How many boys are there?  
b) There are 500 cows on a farm. 25% of them are brown and 75% are black. How many are brown?  
c) A fisherman caught 150 fish. 25% are swordfish, 25% are tuna and 50% are catfish. How many of each type of fish?  
d) In a class of 28 students, 7 did not do their homework. What fraction of the class did *not* do their homework? What percentage of the class *did* their homework?  
e) In a test a student got 10 out of 20 right. What percentage did the student get for the test?  
f) A shepherd had 100 sheep He lost one. What percentage of his sheep did he lose?  
g) A lady had 10 coins. She lost one. What percentage of her coins did she lose? (One in 10 is like 10 in 100).  
h) 5 cents is what percentage of \$1?  
i) I had \$100 and spent \$80. What percentage of the money did I spend?

### Level 19 Card 13

#### Proper fractions, improper fractions and mixed numbers

A *proper fraction* is when the top number (the numerator) is less than the bottom number (the denominator), and it is between 0 and 1, e.g.  $\frac{1}{4}$

An *improper fraction* is the opposite: the top number is greater than the bottom number, e.g.  $\frac{12}{4}$

A *mixed number* is a whole number plus a proper fraction, e.g.  $1\frac{1}{2}$

To change an improper fraction to a proper fraction or mixed number, we divide the numerator by the denominator, e.g. for  $\frac{12}{4}$ , divide the 12 by 4. The answer is 3.

1. Change these improper fractions to whole numbers:

- a)  $\frac{9}{3} = \square$   
b)  $\frac{15}{5} = \square$

But what if there is a remainder? e.g.  $\frac{16}{5}$

We divide 16 by 5 and get 5 and 1 over. That's  $5\frac{1}{5}$

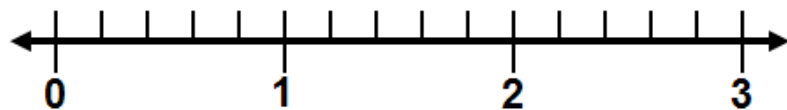
1. Make these into mixed numbers:

- a)  $\frac{21}{2}$    b)  $\frac{38}{5}$    c)  $\frac{59}{7}$    d)  $\frac{101}{10}$    e)  $\frac{46}{6}$    f)  $\frac{28}{3}$

2. Now change these to improper fractions:

- a)  $1\frac{1}{2}$    b)  $8\frac{4}{5}$    c)  $11\frac{3}{10}$    d)  $20\frac{2}{3}$    e)  $15\frac{1}{2}$    f)  $12\frac{3}{4}$

3. Draw this number line and write in all the numbers, including fractions:



### Level 19 Card 14 Test (All times tables should be known)

1. Write in words: 121,911
2. Write in figures: forty-two thousand, three hundred and nine
3. In the number 627,943, the 6 is worth 600, 000. What is the 2 worth?
4. Write this equation another way so that you still get the same answer:

$$(5 \times 2) \times 10 = \square \quad \text{and} \quad \square \times (\square \times \square) = \square$$

5.  $231 \times 3 = (200 \times 3) + (30 \times 3) + (3 \times 3) = \square$
6.  $3 + 6 = \square$     $30 + 60 = \square$     $300 + 600 = \square$
7. Which of these are prime numbers:  
a) 9   b) 12   c) 15   d) 11
8. Arrange these from smallest to largest:

$$.765 \quad 1.6 \quad .02 \quad 3.02$$

9. Addition: set out before working it out.  
 $6.75 + 192.2 + 3000.65 = \square$

10. Subtraction: set out before working it out.  
 $1.1 - 0.5$

11. a)  $654.3 \times 10 = \square$   
b)  $72.08 \times 100 = \square$

12. There were 100 people in a long-distance race. 12 people finished in 15 minutes. What percentage is this?
13. Change  $\frac{17}{5}$  to a mixed number.
14. Change  $1\frac{1}{2}$  to an improper fraction.

## Level 20 Card 1 All times tables should be known x2 – x12

### Square numbers

When you multiply a whole number times itself, you get a square number. So, 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, and so on, are all square numbers, (e.g.  $1 \times 1 = 1$ ;  $2 \times 2 = 4$ )

**1. Make a list of square numbers up to 144 by completing this list:**

$$1 \times 1 = 1$$

$$2 \times 2 = 4 \quad \text{keep going up to ...}$$

$$12 \times 12 = 144$$

**We can show a square number like this:**

$2^2$  is 2 “squared” or  $2 \times 2$ .

**2. Write these numbers as “squared”.**

$$2 \times 2 = 2^2$$

$$3 \times 3 = 3^2 \quad \text{keep going up to } 12^2$$

### Index numbers

An index number is when you multiply a number by itself as many times as shown by the smaller number, e.g.

$$3^3 = 3 \times 3 \times 3 = 27$$

**3. Set out these index numbers the same way.**

$$2^5 =$$

$$4^3 =$$

$$5^3 =$$

**4. Show these numbers as square numbers or index numbers:**

$$25 = \square \times \square$$

$$8 = \square \times \square \times \square = \square$$

$$27 = \square \times \square \times \square = \square$$

## Level 20 card 2

### Place value

1. Write in words: 729,264.
2. Write in figures: nine hundred and fifty-four thousand and three.
3. Round these numbers to the nearest 10:  
a) 32,579   b) 654,922   c) 89,999   d) 26,784
4. Round these numbers to the nearest 100:  
a) 329,644   b) 23,879   c) 4,098   d) 379,009
5. Round these numbers to the nearest 1000:  
a) 267,908   b) 367,864   c) 643,863   d) 257,074
6. Round these numbers to the nearest  $\frac{1}{10}$   
a) 265.12   b) 896.28   c) 290,755.08   d) 362,075.91

### Prime factors

A Prime Factor is a factor that is a prime number. In other words: any of the prime numbers that can be multiplied to give the original number. Example: The prime factors of 15 are 3 and 5 (because  $3 \times 5 = 15$ , and 3 and 5 are prime numbers).

Make a list of prime numbers between 2 and 17. Write the prime factors of each of these. Remember that you can only use prime numbers for the factors:

$$\text{a) } \square \times \square = 4$$

$$\text{b) } \square \times \square = 14$$

$$\text{c) } \square \times \square = 33$$

$$\text{d) } \square \times \square = 51$$

$$\text{e) } \square \times \square = 35$$

$$\text{f) } \square \times \square = 26$$

$$\text{g) } \square \times \square = 57$$

$$\text{h) } \square \times \square = 55$$



### Level 20 Card 3

#### Ascending and descending order of numbers

##### 1. Write this set of numbers in ascending order:

42,537 47,235 72,543 37,452 54,723

##### 2. Write this set of numbers in descending order:

42,537 47,235 72,543 37,452 54,723

##### 3. Rounding Numbers

Copy the number in the line which is nearest in value to the number in bold print:

a) **5,736** 700 5,000 6,000 7,000

b) **24,560** 26,000 23,000 25,000 24,000

c) **384,505** 38,000 380,000 400,000 84,000

d) **153,489** 200,000 100,000 150,000 15,000

##### 4. Addition in your head

a)  $93,483 + 10 =$

b)  $763,201 + 100 =$

c)  $67,928 + 1000 =$

d)  $24,875 + 10,000 =$

### Level 20 Card 4

##### 1. Write each set of numbers in ascending order.

a) 30,378 73,830 80,337 80,733 33,708

b) 510,871 108,752 705,184 817,053 758,102

##### 2) Write each set of numbers in descending order.

a) 683,216 642,136 651,336 673,126 653,621

b) 496,878 485,879 486,798 485,978 487,689

##### 2. Decimals

23.3 = 273 tenths. 2.73 = 273 hundredths. .273 = 273 thousandths.

a)  $45.2 = \square$  tenths                      b)  $6.85 = \square$  hundredths

c)  $.753 = \square$  thousandths              d)  $1.00 = \square$  hundredths

##### 3. Inverse operations

Addition and subtraction are opposites. When you adjust one element, you just adjust the other to keep the answer the same. In your head:

a)  $8 + 9 = 17$                       b)  $16 - 9 = 7$

$12 + \square = 17$                        $18 - \square = 7$

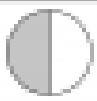
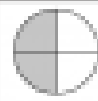
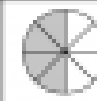
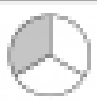

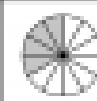
$\square + 3 = 17$                        $\square - 13 = 7$

Multiplication and division are opposites:

c)  $12 \times 5 = \square$                       d)  $\square \div \square = \square$

**Level 20 Card 5**  
**Equivalent Fractions**

Fill in the missing numbers.

$\frac{1}{2}$	$\frac{2}{4}$	$\frac{4}{8}$	$\frac{1}{3}$	$\frac{2}{6}$	$\frac{4}{12}$
					
$\frac{1}{2} = \frac{\square}{4}$	$\frac{1}{3} = \frac{\square}{6}$	$\frac{2}{6} = \frac{\square}{12}$			
$\frac{1}{2} = \frac{\square}{8}$	$\frac{1}{3} = \frac{\square}{12}$	$\frac{2}{6} = \frac{\square}{3}$			
$\frac{2}{4} = \frac{\square}{8}$	$\frac{4}{8} = \frac{\square}{2}$	$\frac{4}{12} = \frac{\square}{3}$			
$\frac{2}{4} = \frac{\square}{2}$	$\frac{4}{8} = \frac{\square}{4}$	$\frac{4}{12} = \frac{\square}{6}$			

**Level 20 Card 6**  
**Equivalent fractions: changing the denominator (bottom)**

These fractions are really the same:

$$\frac{1}{2} = \frac{2}{4}$$

*We multiply the bottom number (2) by 2 and we get 4. Now we must multiply the top number (1) by 2 to get 2*

Try these. Remember, whatever you multiply the bottom number by, you must do the same for the top.

$$\frac{1}{3} = \frac{\square}{6}$$

$$\frac{3}{5} = \frac{\square}{35}$$

$$\frac{3}{8} = \frac{\square}{24}$$

$$\frac{1}{6} = \frac{\square}{36}$$

$$\frac{1}{4} = \frac{\square}{36}$$

$$\frac{6}{8} = \frac{\square}{56}$$

$$\frac{3}{3} = \frac{10}{15}$$

$$\frac{1}{8} = \frac{\square}{56}$$

### Level 20 Card 7

Equivalent Fractions: changing the denominator (bottom)

$$\frac{3}{4} = \frac{\quad}{8}$$

$$\frac{4}{6} = \frac{\quad}{3}$$

$$\frac{1}{2} = \frac{\quad}{10}$$

$$\frac{6}{12} = \frac{\quad}{6}$$

$$\frac{1}{3} = \frac{\quad}{6}$$

$$\frac{1}{6} = \frac{\quad}{12}$$

$$\frac{5}{10} = \frac{\quad}{6}$$

$$\frac{2}{3} = \frac{\quad}{9}$$

$$\frac{2}{4} = \frac{\quad}{6}$$

$$\frac{1}{4} = \frac{\quad}{12}$$

$$\frac{6}{9} = \frac{\quad}{3}$$

$$\frac{2}{5} = \frac{\quad}{10}$$

$$\frac{6}{8} = \frac{\quad}{12}$$

$$\frac{5}{7} = \frac{\quad}{14}$$

$$\frac{14}{16} = \frac{\quad}{8}$$

### Level 20 Card 8

Equivalent fractions: changing the numerator (top)

Step 1: Find out what the numerator is multiplied by.

Step 2: Multiply the denominator by the same.

$$\frac{11}{2} = \frac{33}{\quad}$$

$$\frac{6}{\quad} = \frac{24}{36}$$

$$\frac{1}{\quad} = \frac{5}{50}$$

$$\frac{4}{7} = \frac{16}{\quad}$$

$$\frac{39}{12} = \frac{13}{\quad}$$

$$\frac{4}{\quad} = \frac{8}{18}$$

$$\frac{5}{\quad} = \frac{20}{12}$$

## Level 20 card 9

### Equations

1. Use **BOMDAS** (by, of, multiply, divide, add subtract)

a)  $\frac{5}{8} \times 40 + 56 \div 7 - (\frac{2}{3} \times 9 - 4) = \square$

b)  $\frac{2}{3}$  of 33  $-$  ( $\frac{5}{6}$  of 12)  $= \square$

c)  $12 - 9 + 11 \times 3 \times 12 = \square$

d)  $7 - 1 \times 14 + 7 - 3 = \square$

e)  $6 + 72 \div 9 = \square$

f)  $7^2 + (\frac{1}{2}$  of 32)  $- 27 = \square$

g)  $5^3 - (\frac{2}{3}$  of 21)  $+ 14 = \square$

### 2. Find the missing numbers

$$\square - 110 = 2534 + 135$$

$$1334 + 259 = \square - 172$$

$$5129 - \square = 4825 + 146$$

$$5263 + 184 = 5692 - \square$$

$$9633 - 326 = \square + 342$$

$$\square + 295 = 8127 - 221$$

3. Make as many equations as you can from the numbers

5, 3 and 2. Example:  $(5+3) \div 2 = 4$

## Level 20 Card 10

### Solving simple real-life problems using fractions

- Ray bought a loaf of bread and ate  $\frac{1}{4}$  of it while his friend ate  $\frac{1}{3}$ . What fraction of the bread did they eat altogether?
- For breakfast one morning Mum made 10 rotis. Ram ate  $2\frac{1}{2}$ , Bimla ate  $1\frac{1}{3}$ , Priya ate  $1\frac{1}{4}$ .
  - How much roti did the children eat?
  - How much roti was left?
- Jone dug a rectangular garden which was  $\frac{2}{3}$ m long and  $\frac{1}{3}$  m wide. What was the length of the garden in cm?
- Karan bought a material which was  $3\frac{1}{2}$  m long. He used  $2\frac{1}{2}$  m for his shirt. How much material was left?
- From a half watermelon Lee ate  $\frac{2}{16}$  and Suzie ate  $\frac{1}{4}$ .
  - How much watermelon did they eat altogether?
  - How much was left?
- A whole pizza was equally divided into 16 pieces. If Jane ate one quarter of the pizza:
  - how many pieces did she eat?
  - how much was left? (answer in fraction and pieces)
- Vili ate three pieces of pie. If each piece is  $\frac{1}{8}$  how much pie did he eat?
- A tin of paint was  $\frac{2}{3}$  litres full. Bill used  $\frac{1}{2}$  of the paint to paint his table. How much was left?

### Level 20 Card 11

#### Addition and subtraction of fractions

##### Set 1

$$1) \frac{1}{10} + \frac{7}{10} =$$

$$2) \frac{1}{5} + \frac{1}{5} =$$

$$3) \frac{2}{9} + \frac{2}{9} =$$

$$4) \frac{1}{12} + \frac{2}{12} =$$

$$5) \frac{2}{9} + \frac{3}{9} =$$

$$6) \frac{6}{7} - \frac{2}{7} =$$

$$7) \frac{8}{11} - \frac{6}{11} =$$

$$8) \frac{2}{4} - \frac{1}{4} =$$

$$9) \frac{10}{12} - \frac{8}{12} =$$

$$10) \frac{2}{6} - \frac{1}{6} =$$

##### Set 2

$$1) \frac{1}{2} + \frac{1}{4} =$$

$$2) \frac{2}{3} + \frac{1}{6} =$$

$$3) \frac{3}{10} + \frac{2}{5} =$$

$$4) \frac{5}{7} + \frac{1}{14} =$$

$$5) \frac{3}{18} + \frac{4}{9} =$$

$$6) \frac{5}{6} - \frac{1}{3} =$$

$$7) \frac{9}{10} - \frac{1}{2} =$$

$$8) \frac{9}{14} - \frac{1}{7} =$$

$$9) \frac{9}{20} - \frac{1}{4} =$$

$$10) \frac{7}{8} - \frac{3}{4} =$$

### Level 20 Card 12

#### Addition of fractions

$$1) \frac{1}{2} + \frac{2}{3} =$$

$$2) \frac{1}{7} + \frac{1}{5} =$$

$$3) \frac{3}{6} + \frac{1}{2} =$$

$$4) \frac{4}{5} + \frac{1}{4} =$$

$$5) \frac{7}{8} + \frac{1}{4} =$$

$$6) \frac{2}{3} + \frac{1}{3} =$$

$$7) \frac{2}{6} + \frac{3}{6} =$$

$$8) \frac{1}{5} + \frac{4}{5} =$$

$$9) \frac{2}{4} + \frac{1}{3} =$$

$$10) \frac{1}{4} + \frac{4}{8} =$$

$$11) \frac{2}{5} + \frac{1}{5} =$$

$$12) \frac{2}{3} + \frac{1}{5} =$$

$$13) \frac{2}{7} + \frac{5}{6} =$$

$$14) \frac{4}{6} + \frac{4}{8} =$$

$$15) \frac{2}{3} + \frac{1}{8} =$$

$$16) \frac{2}{3} + \frac{3}{6} =$$

$$17) \frac{3}{4} + \frac{1}{3} =$$

$$18) \frac{1}{3} + \frac{3}{5} =$$

**Level 20 Card 13****Subtraction of fractions**

1)  $\frac{5}{8} - \frac{7}{16} =$

2)  $\frac{1}{2} - \frac{1}{4} =$

3)  $\frac{1}{2} - \frac{3}{8} =$

4)  $\frac{11}{16} - \frac{1}{2} =$

5)  $\frac{3}{4} - \frac{9}{16} =$

6)  $\frac{3}{4} - \frac{3}{8} =$

7)  $\frac{1}{4} - \frac{1}{8} =$

8)  $\frac{7}{8} - \frac{7}{16} =$

9)  $\frac{5}{8} - \frac{1}{2} =$

10)  $\frac{15}{16} - \frac{3}{4} =$

**Level 20 card 14 Test** *All times tables should be known.*

1. Write in words: 231, 567

2.  $8433 - 184 = \square + 1842$

3.  $2^2 = 2 \times 2 = 4$ . What is  $3^2$  ?

4. Round these numbers to the nearest 1000:

a) 267,908      b) 367,864

5. a)  $\frac{2}{3} = \frac{\quad}{12}$       b)  $\frac{3}{5} = \frac{\quad}{15}$

6. a)  $\frac{7}{8} = \frac{14}{\quad}$       b)  $\frac{3}{9} = \frac{12}{\quad}$

7. a)  $\frac{1}{3}$  of 30 - ( $\frac{3}{4}$  of 12) =  $\square$       b)  $12 - 9 + 11 \times 3 \times 12 = \square$

8. a)  $\frac{3}{10} + \frac{4}{5} = \square$       b)  $\frac{1}{6} + \frac{2}{3} = \square$

9. a)  $\frac{3}{4} - \frac{1}{2} = \square$       b)  $\frac{5}{8} - \frac{1}{4} = \square$

10. Convert these improper fractions to mixed numbers:

a)  $\frac{23}{5}$       b)  $\frac{42}{8}$

11. At your birthday party you had 6 pizzas. Each pizza was divided into 8 pieces. 41 pieces were eaten. What fraction of a pizza was left?

12. Jasmine has 50 marbles in a bag. 20% of the marbles are blue. How many are blue?

**Level 21 Card 1** All times tables should be known x2 – x12

**1. Write in words:**

- a) 54,209      b) 756,003      c) 1,000,000

**2. Addition of whole numbers**

Set these out first:

- a)  $525 + 468 =$   
b)  $4,566 + 3,236 =$   
c)  $71,432 + 25,918 =$   
d)  $549,584 + 657,549 =$   
e)  $4,261,345 + 2,746,855 =$

**3. Subtraction of whole numbers**

Set these out first:

- a.  $342 - 126 =$   
b.  $5,644 - 2,327 =$   
c.  $37,657 - 13,548 =$   
d.  $813,782 - 302,579 =$   
e.  $624,952 - 515,798 =$

**Level 21 Card 2**

**1. Multiplication of whole numbers** (Set out first)

- a)  $34 \times 24 =$   
b)  $74 \times 46 =$   
c)  $345 \times 35 =$   
d)  $287 \times 64 =$   
e)  $62453 \times 35 =$   
f)  $42546 \times 23 =$   
g)  $358374 \times 32 =$   
h)  $413675 \times 36 =$

**2. Multiplying by 10, 100 and 1000** (Look at the examples first):

$53 \times 10 = 530$  ... add 1 zero

$528 \times 100 = 52,800$  ... add two zeros

$7,031 \times 1,000 = 7,031,000$  ... add three zeros

Try these:

- a)  $43 \times 10 =$       b)  $76 \times 100 =$       c)  $35 \times 1000 =$   
d)  $365 \times 10 =$       e)  $374 \times 100 =$       f)  $54 \times 1000 =$   
g)  $93,744 \times 10 =$       h)  $32,81 \times 100 =$       i)  $936,789 \times 1000 =$   
j)  $4,769 \times 10 =$       k)  $791 \times 100 =$       l.  $604,456 \times 1000 =$

### Level 21 Card 3

#### Short division

Example:

$$362 \div 7 =$$

$$\begin{array}{r} 51 \text{ r}5 \\ 7 \overline{) 362} \end{array}$$

$$362 \div 7 = 51 \text{ r}5$$

Try these

$3 \overline{) 701}$

$4 \overline{) 591}$

$4 \overline{) 781}$

$2 \overline{) 359}$

$9 \overline{) 958}$

$8 \overline{) 801}$

$7 \overline{) 755}$

$7 \overline{) 811}$

$5 \overline{) 514}$

$6 \overline{) 727}$

$6 \overline{) 920}$

$6 \overline{) 833}$

$9 \overline{) 923}$

$2 \overline{) 777}$

$9 \overline{) 933}$

$5 \overline{) 734}$

$5 \overline{) 562}$

$2 \overline{) 471}$

$3 \overline{) 473}$

$8 \overline{) 867}$

### Level 21 card 4

#### Vertical division (Long division)

Example:

$$\begin{array}{r} 0318 \text{ r}5 \\ 20 \overline{) 6365} \\ \underline{-60} \phantom{0} \\ 36 \\ \underline{-20} \phantom{0} \\ 165 \\ \underline{-160} \\ 5 \end{array}$$

Try these:

$11 \overline{) 1089}$

$16 \overline{) 960}$

$17 \overline{) 1292}$

$25 \overline{) 1250}$

$27 \overline{) 1377}$

$13 \overline{) 884}$

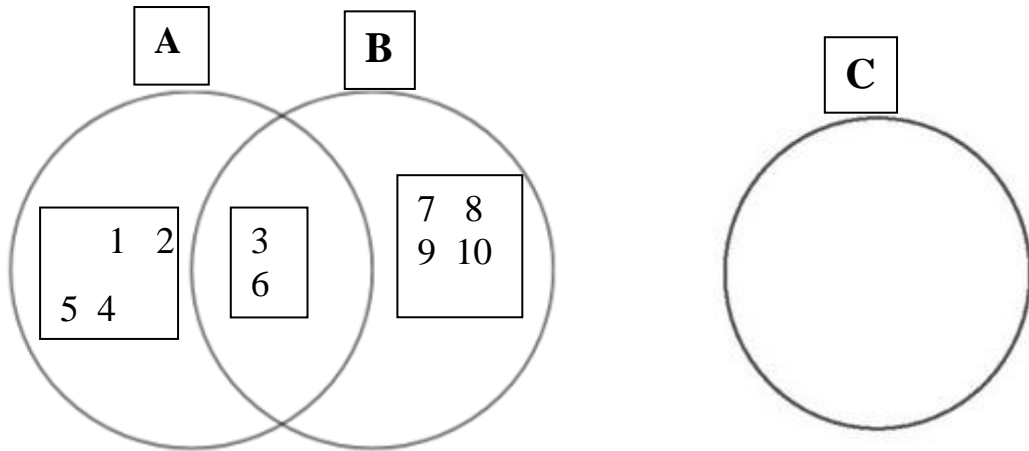
$21 \overline{) 798}$

$25 \overline{) 1050}$

$27 \overline{) 2052}$



**Level 21 Card 5**  
**Sets**



1. The elements of set A are .....
2. There are ..... members in set A.
3. {3, 6, 7, 8, 9, 10} are elements of set .....
4. Set B has a number property of .....
5. Set  $A \cup B = \{.....\}$  (*union*)
6. Set  $A \cap B = \{.....\}$  (*intersection*)
7. There are .....members in set C.
8. Set C is a .....set or empty set. We write a null set as { }.
9. Write a set of Whole numbers less than 15.  
{..... }

**Level 21 Card 6**

**Reducing fractions to lowest terms**

<sup>1</sup> $\frac{12}{18} =$	<sup>2</sup> $\frac{30}{36} =$	<sup>3</sup> $\frac{3}{12} =$
<sup>4</sup> $\frac{15}{25} =$	<sup>5</sup> $\frac{3}{18} =$	<sup>6</sup> $\frac{12}{24} =$
<sup>7</sup> $\frac{6}{24} =$	<sup>8</sup> $\frac{8}{16} =$	<sup>9</sup> $\frac{6}{36} =$
<sup>10</sup> $\frac{8}{10} =$	<sup>11</sup> $\frac{6}{30} =$	<sup>12</sup> $\frac{2}{12} =$

**Level 21 Card 7**  
**Multiplying fractions**

Example:

$$\frac{1}{4} \times \frac{2}{3} = \frac{1 \times 2}{4 \times 3} = \frac{2}{12}$$

Try these:

1.  $\frac{1}{3} \times \frac{2}{3} =$

2.  $\frac{7}{8} \times \frac{2}{8} =$

3.  $\frac{2}{3} \times \frac{2}{3} =$

4.  $\frac{2}{5} \times \frac{3}{5} =$

5.  $\frac{3}{5} \times \frac{4}{5} =$

6.  $\frac{1}{5} \times \frac{1}{5} =$

7.  $\frac{1}{4} \times \frac{1}{4} =$

8.  $\frac{6}{8} \times \frac{6}{8} =$

9.  $\frac{5}{6} \times \frac{3}{6} =$

10.  $\frac{3}{8} \times \frac{5}{8} =$

11.  $\frac{2}{4} \times \frac{3}{4} =$

12.  $\frac{7}{8} \times \frac{3}{8} =$

13.  $\frac{2}{6} \times \frac{4}{6} =$

14.  $\frac{2}{3} \times \frac{1}{3} =$

**Level 21 Card 8**  
**Multiply these fractions**  
and reduce to lowest term.

**Example:**

$$\frac{1}{4} \times \frac{2}{3} = \frac{1 \times 2}{4 \times 3} = \frac{2}{12} = \begin{array}{l} \text{reduces} \\ \text{to} \end{array} \frac{1}{6}$$

1.  $\frac{3}{4} \times \frac{2}{3} = \text{---} = \text{---}$

2.  $\frac{7}{8} \times \frac{2}{5} = \text{---} = \text{---}$

3.  $\frac{1}{4} \times \frac{5}{6} = \text{---} = \text{---}$

4.  $\frac{2}{9} \times \frac{4}{5} = \text{---} = \text{---}$

5.  $\frac{11}{12} \times \frac{5}{7} = \text{---} = \text{---}$

**Multiplying fractions by whole numbers**

*Hint:* Write the whole numbers like this: e.g.  $4 = \frac{4}{1}$

$$\frac{1}{2} \times 4 = \boxed{\phantom{00}}$$

$$9 \times \frac{2}{3} = \boxed{\phantom{00}}$$

$$\frac{7}{2} \times 8 = \boxed{\phantom{00}}$$

### Level 21 Card 9

#### Multiplying mixed numbers

Example:

$$1\frac{1}{2} \times 2\frac{1}{5} = 3\frac{3}{10}$$
$$\frac{3}{2} \times \frac{11}{5} = \frac{33}{10}$$

Do the multiplication as Improper Fractions

Try these:

1)  $3\frac{3}{5} \times 3\frac{1}{3} =$

2)  $4\frac{1}{2} \times 4\frac{2}{3} =$

3)  $3\frac{2}{3} \times 3\frac{4}{5} =$

4)  $2\frac{2}{5} \times 4\frac{1}{5} =$

5)  $4\frac{1}{2} \times 2\frac{3}{4} =$

6)  $3\frac{1}{2} \times 2\frac{1}{4} =$

7)  $4\frac{3}{5} \times 3\frac{1}{2} =$

8)  $3\frac{1}{2} \times 4\frac{1}{3} =$

9)  $2\frac{1}{2} \times 2\frac{2}{3} =$

10)  $3\frac{1}{2} \times 4\frac{3}{4} =$

### Level 21 Card 10

#### Division of fractions

Rule: flip the numerator and denominator of the second fraction and multiply, e.g.

$$\frac{3}{4} \div \frac{2}{3} = \frac{3}{4} \times \frac{3}{2}$$

Try these:

1)  $\frac{2}{5} \div \frac{3}{4} =$

2)  $\frac{2}{4} \div \frac{1}{2} =$

3)  $\frac{4}{5} \div \frac{2}{3} =$

4)  $\frac{2}{5} \div \frac{2}{3} =$

5)  $\frac{2}{4} \div \frac{1}{5} =$

6)  $\frac{3}{4} \div \frac{4}{5} =$

7)  $\frac{1}{2} \div \frac{6}{10} =$

8)  $\frac{1}{2} \div \frac{2}{3} =$

9)  $\frac{2}{4} \div \frac{3}{10} =$

10)  $\frac{2}{3} \div \frac{1}{5} =$

## Level 21 Card 11

### Fraction word problems

1. Tim was selling 32 coconuts at a road side. Three eighths of the coconuts were fresh bu (green coconuts juice) and the rest were matured coconuts. Half of the matured coconuts were big while the rest were small.

- How many coconuts were fresh bu?
- What fraction of the coconuts were matured coconuts?
- How many coconuts were matured and big?

2. Sara was selling 27 apples at the market. One third of the apples were green while the rest were red. Half of the red apples were sweet.

- How many apples were green?
- What fraction of the apples was red?
- How many apples were red?
- What fraction of the red apples was not sweet?
- How many apples were red and sweet?

3. Chan has 6 metres of shirt material. How many  $1\frac{1}{2}$  metre pieces can he cut from the material?

4. Priya had 10 metres of ribbon. She wanted to cut it into  $2\frac{1}{2}$  metre pieces. How many pieces of ribbon will she cut?

## Level 21 Card 12

### More word problems

- Ben made a garden 10 metres long. Later he decided to cut it up into small plots of  $2\frac{1}{2}$  metres in length. How many plots can he make?
- A stick is  $3\frac{1}{4}$  metres long and it needs to be cut equally into  $\frac{1}{4}$  metre pieces. How many pieces can be cut from the stick?
- A hot water urn containing  $10\frac{1}{2}$  litres of tea need to be poured out into  $1\frac{1}{2}$  litre bottles. How many  $1\frac{1}{2}$  litre bottles can be filled from the tea urn?
- Akuila was sent by his mum to buy  $2\frac{1}{2}$  kg of potatoes. When he returned, his mum noticed that the price tag says 2kg. How many more grams of potatoes does Akuila have to buy?
- Sereana bought a big packet of chips with the weight of 750g. She ate some and gave the rest to her sister. Her sister weighs the packet and found out that it was 250g.
  - How much of the chips did Sereana eat? (answer in grams)
  - Did Sereana eat more chips or less than her sister?
- Pete went to bed at 8.45 p.m. and woke up at 6.15 a.m. the next day. How long did he sleep?
- The Pacific Transport bus left Suva at 9.15 a.m. and it reached Sigatoka at 11.30 a.m.
  - How long was the trip from Suva to Sigatoka?
  - What should have been the actual arrival time if a 15-minute delay occurred due to mechanical problems?

### Level 21 Card 13

#### Word problems

Answer the questions below and calculate the average speed of the following events. **Average speed = distance ÷ time**

1. The Inter-City bus leaves Sydney Central Station at 10.00 a.m. and reaches Seal Rocks at 1.00 p.m. covering a distance of 219 km.

- i) How long did it take the bus to reach Seal Rocks?
- ii) Find the average speed of the bus.

2. A bus leaves Brisbane at 9.15 a.m. and reaches Caboolture after twenty-five minutes, travelling fifty-five kilometers.

- i) How long is the journey?
- ii) What is the average speed?

3. A rental car leaves Melbourne at 10.20 a.m. and reaches Phillip Island at 11.40 a.m. covering a distance of 75 kilometres.

- i) How long is the drive?
- ii) Find the average speed of the car.

4. If an athlete ran 100 metres in 10 seconds, find his average speed in metres per seconds?

### Level 21 Card 14 Test *All times tables should be known*

1. Write in words: 154,209
2. Set out and multiply:  $62453 \times 35 =$
3. In your head:  $96 \times 1000 =$
4. Short division:  $7 \overline{)755}$

5. Vertical division (long division):  $16 \overline{)960}$

6. Reduce these fractions to their lowest terms:

a)  $\frac{12}{16} = \frac{\quad}{\quad}$     b)  $\frac{21}{24} = \frac{\quad}{\quad}$

7. Multiply these fractions and reduce the answer to lowest terms:

a)  $\frac{4}{5} \times \frac{7}{8} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$     b)  $\frac{2}{3} \times \frac{3}{4} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

8. Multiply these mixed numbers:

a)  $3\frac{1}{2} \times 2\frac{1}{4} = \quad$     b)  $3\frac{3}{5} \times 3\frac{1}{3} = \quad$

9. Division of fractions:

a)  $\frac{4}{5} \div \frac{2}{3} = \frac{\quad}{\quad} \times \frac{\quad}{\quad} = \frac{\quad}{\quad}$     b)  $\frac{1}{2} \div \frac{1}{5} = \frac{\quad}{\quad} \times \frac{\quad}{\quad} = \frac{\quad}{\quad}$

10. Twelve friends plan to order pizza for dinner. They guessed that everyone would eat  $\frac{1}{3}$  of a pizza. How many pizzas should they order?