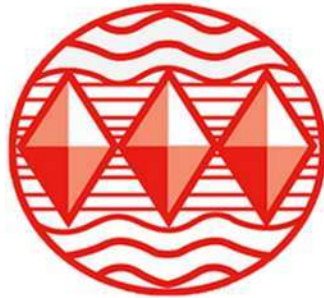# Higham Lane School – Maths Department

Y6-Y7 Transition Work

This booklet contains a number of different Maths activities for you to have a go at.

Working through them will help make sure that you are prepared to join our Maths department in September.

We look forward to seeing you!

Activities in this Booklet

Activity 1 – Different Types of Numbers

Practise your number skills and ensure you can recognise some key types of number.

Activity 2 – Times Table Challenge

Practise your times tables ready for a challenge when you start at Higham Lane School in September

Activity 3 – Calculator Crossnumber 1

When you start Maths in Year 7 you will need a scientific calculator. Practise using yours with this crossnumber.

Activity 4 – Calculator Crossnumber 2

Practise using your calculator a bit more with these harder questions.

Activity 5 – Knowledge Organiser

Learn these key facts ready to use them in September.

Higham Lane School Maths Department - Different Types of Numbers

Which different types of numbers do you know?

- List the first 15 **square** numbers.
- List the first 5 **cube** numbers.
- List the first 5 **triangle** numbers.
- List the first 10 **prime** numbers.

Questions

1) I am thinking of a number. It is a square number and a cube number.
   What is my number?

2) I am thinking of a number. It is 3 greater than a square number, 1 greater than a cube number and 1 less than a prime number.
   What is my number?

3) Can you think of a **square number** between 700 and 750?

Gold Challenge

1) A "perfect" number is where the sum of its factors (not including the number itself) add up to make the number.
   e.g. The factors of 6 are 1, 2, 3 and 6.   1 + 2 + 3 = 6.   6 is a perfect number.
   Can you find any perfect numbers?

2) I am thinking of a number. It is 35 greater than a cube number. It is 29 less than a square number. The sum of its digits is 16. It is a prime number.
   What is my number?

3) To find out if a number is happy or not, you should square the digits and add them up, and then repeat if necessary. If you get 1 you have found a happy number.
   e.g. Consider 19: $1^2 + 9^2 = 82$, $8^2 + 2^2 = 68$. $6^2 + 8^2 = 100$, $1^2 + 0^2 + 0^2 = 1$,
   19 is a happy number!
   How many happy numbers can you find?
   Make a poster about happy numbers.

Higham Lane Maths Department - Times Tables Challenge

Use the grids below to practise your times tables ready for the times tables challenge that we will be running when you are here in the Autumn Term.

X	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

X	5	4	12	1	11	3	6	10	2	9	7	8
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

X	1	2	3	4	5	6	7	8	9	10	11	12
4												
11												
3												
1												
9												
6												
2												
8												
7												
10												
5												
12												

X	5	4	12	1	11	3	6	10	2	9	7	8
4												
11												
3												
1												
9												
6												
2												
8												
7												
10												
5												
12												

Use your calculator to answer these questions:

Across

1 $26 \times 34 - 19 =$ ....

4 $(3 \times 4)^2 =$ ....

6 $417 \times (29 + 87) =$ ....

7 $(1 + 5) \times 61 =$ ....

9 $1310 \times 0.4 =$ ....

11 $\frac{11 \times 12 \times 13}{1 \times 2 \times 3} =$ ....

13 $\frac{274 + 58}{4} =$ ....

14 $3 \times 4^2 =$ ....

15 $8^3 =$ ....

16 $\sqrt{207936} =$ ....

18 $706 \times \frac{1}{2} =$ ....

20 $417 \times 29 + 87 =$ ....

22 $1\frac{9}{10} + 2\frac{4}{5} =$ ....

23 $4.8 \div 0.8 =$ ....

Down

1 $458 + 5 \times 77 =$ ....

2 $42 \times 13 =$ ....

3 $3.65 \times 20 =$ ....

4 $5^3 =$ ....

5 $26 \div \frac{1}{19} =$ ....

8 $506 \div 80 =$ ....

10 $3.96 \div 1.6 =$ ....

11 $\sqrt{6\frac{1}{4}} =$ ....

12 $3\frac{1}{2} + 2\frac{7}{10} =$ ....

16 $11^2 \times 4 =$ ....

17 $\frac{618 + 616}{618 - 616} =$ ....

18 $1 + 5 \times 61 =$ ....

19 $26 \times (34 - 19) =$ ....

21 $\frac{5}{8} \times 16 =$ ....

Now write your answers on the grid below.

If an answer doesn't fit then you've made a mistake... Oops! Can you correct it?

Use your calculator to answer these questions:

Down

1 1 x 2 x 3 x 4 x 5 = ...

2 5 x 5 x 5 x 5 x 5 = ...

4 1 x (2 + 3) x (4 + 5) = ...

5 5 x 5 + 5 + 5 x 5 = ...

8 9 + 8 + 7 + 6 + 5 = ...

9 9 x 8 x 7 x 6 x 5 = ...

12 (1000 + 100) x (10 + 1) = ...

13 1000 – 100 – 10 – 1 = ...

15 9 + (8 x 7) + (6 x 5) = ...

17 1 + 2 + 3 + 4 + 5 = ...

Across

3 9 x (8 + 7) x (6 + 5) = ...

6 1 + (2 x 3) + (4 x 5) = ...

7 (1000 ÷ 100) + (10 ÷ 1) = ...

9 5 + 5 x 5 x 5 + 5 = ...

10 (1 x 2) + 3 + (4 x 5) = ...

11 (1 + 2) x 3 x (4 + 5) = ...

14 (9 x 8) + 7 + (6 x 5) = ...

16 (9 + 8) x 7 x (6 + 5) = ...

17 (1000 + 100) ÷ (10 + 1) = ...

18 1000 x 100 ÷ 10 x 1 = ...

Now write your answers on the grid below.

If an answer doesn't fit then you've made a mistake... Oops! Can you correct it?

HLS Maths Knowledge Organiser – Y6 to Y7

Task 1: Learn these types of number

Square number patterns

Square numbers get their name from the pattern they make.

Area = 1 × 1 = 1² = 1

Area = 2 × 2 = 2² = 4

Area = 3 × 3 = 3² = 9
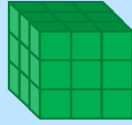
Area = 4 × 4 = 4² = 16
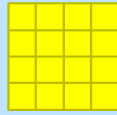
See if you can continue the pattern!

Cube number patterns

Cube numbers get their name from the pattern they make.

Volume = 1 × 1 × 1 = 1³ = 1

Volume = 2 × 2 × 2 = 2³ = 8

Volume = 3 × 3 × 3 = 3³ = 27

See if you can continue the pattern!

What is a prime number?

A **prime number** has only two factors, 1 and the number itself.

2 is a prime number:

1 × 2 = 2
Only two factors

11 is a prime number:

1 × 11 = 11
Only two factors

15 is **not** a prime number:

1 × 15 = 15
3 × 5 = 15
Four factors!
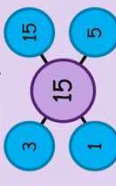
Learn the prime numbers up to 50. These are:
2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47.

Top Tip
2 is the only even prime number. Many of the "weird" odd numbers (11, 13, 17) are prime.

Watch out!
1 is **not** a prime number! It only has **one** factor: the number 1 (1 × 1 = 1)

Task 2: Remember these tips for working with fractions, decimals and percentages

Fraction	Decimal	Percentage
$\frac{1}{2}$	0.5	50%
$\frac{1}{4}$	0.25	25%
$\frac{3}{4}$	0.75	75%
$\frac{1}{10}$	0.1	10%
$\frac{1}{5}$	0.2	20%
$\frac{1}{20}$	0.05	5%
$\frac{1}{25}$	0.04	4%
$\frac{1}{100}$	0.01	1%

To work out **43% of £300** using 1%...

÷ 100 to find 1%

$$\frac{1\% \text{ of } £300}{£300 \div 100} = £3$$
$$1\% = £3$$

× 43 to get 43%

$$\frac{43\% \text{ of } £300}{£3 \times 43} = £129$$

Top Tip
Calculate 3 × 43 by splitting into **tens** and **units**.
3 × 40 = 120
3 × 3 = 9
120 + 9 = 129

To write a fraction as a percentage, we can find an equivalent fraction with a denominator of 100.

For example,

$$\frac{17}{20} \overset{\times 5}{\underset{\times 5}{=}} \frac{85}{100} \quad \text{and} \quad \frac{85}{100} = 85\%$$

Percentage	Fraction	How to find it...
50%	$\frac{50}{100} = \frac{1}{2}$	Divide by 2
25%	$\frac{25}{100} = \frac{1}{4}$	Divide by 4
75%	$\frac{75}{100} = \frac{3}{4}$	Find 25%, then multiply by 3
10%	$\frac{10}{100} = \frac{1}{10}$	Divide by 10
20%	$\frac{20}{100} = \frac{1}{5}$	Divide by 5, or double 10%
5%	$\frac{5}{100} = \frac{1}{20}$	Divide by 20, or half 10%
1%	$\frac{1}{100}$	Divide by 100

Task 3: Lines of symmetry recap

Isosceles triangle – 1 line of symmetry

Rectangle – 2 lines of symmetry

Equilateral triangle – 3 lines of symmetry

Parallelogram – no line of symmetry

Square – 4 lines of symmetry
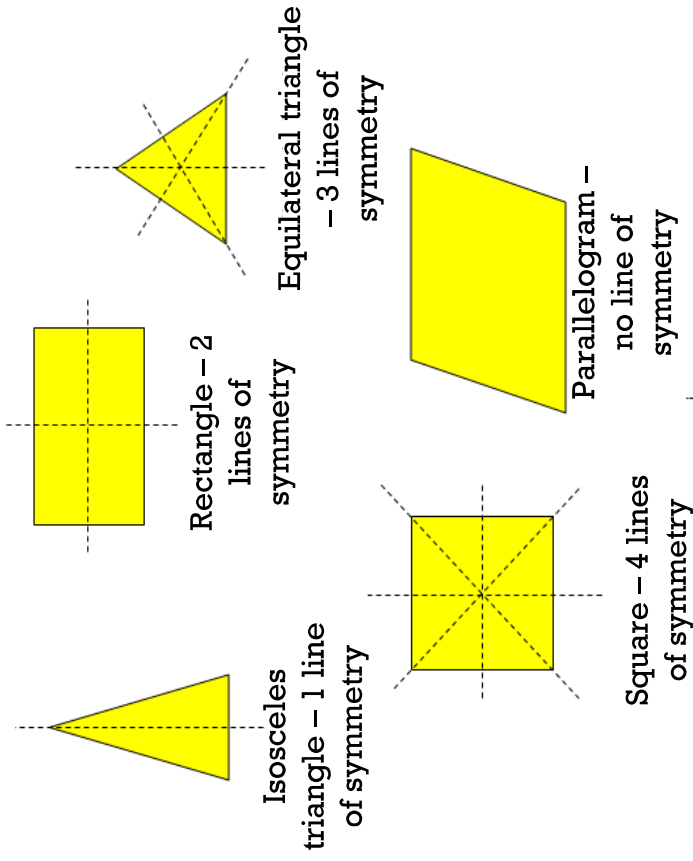
Task 4: Remember these formulae for area and perimeter

Length and width should always be **perpendicular** (at right angles).

width

length

width

length

To work out the area of a rectangle, multiply length by width.

width

length

Area = length × width
A = lw

A triangle is half of a rectangle, so...

width

length

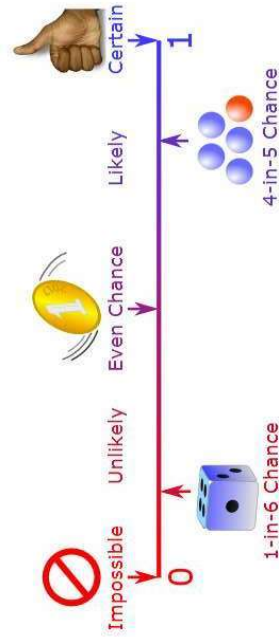Area = ½ length × width
$A = \frac{1}{2}lw$ or $\frac{lw}{2}$

Perimeter of a Rectangle

l – length
w – width
P – perimeter

w

w

l

l

P = w + l + w + l
P = 2w + 2l
P = 2(w + l)

Task 5: Remember these important facts about the probability scale

Probability is the **chance** that something will happen. It can be shown on a line:

Impossible

Impossible   Unlikely   Even Chance   Likely   Certain

1-in-6 Chance

4-in-5 Chance

Certain

0   1

As well as words, we can use fractions and decimals to show the probability of something happening. These are all between 0 and 1

➤ Impossible is 0
➤ Certain is 1

Example: here we show the probability that:

b   c   a

0   ¼   ½   ¾   1

d

- **a)** The sun will rise tomorrow
- **b)** I will not have to learn mathematics at school
- **c)** If I flip a coin it will land heads up
- **d)** Choosing a red ball from a bag with 1 red ball and 3 green balls