First Year Maths Revision List

1. Natural Numbers – Chapter 1
2. Integers – Chapter 2
3. Fractions – Chapter 3
4. Decimals – Chapter 4
5. Patterns – Notes in hardback copy.
6. Algebra – Chapter 6
7. Percentages – Chapter 7
8. Probability – Chapter 8
9. Perimeter and Area – Chapter 9
10. Geometry 1: Points, angles and lines – Chapter 10
11. Geometry 2: Triangles – Chapter 15
12. Ratio and Proportion – Chapter 11

Revision should consist of the following:

• Go over the test yourself section at the end of each chapter.

• Go over your maths tests.

• Use your hardback, book and internet to help you with revision.

• Practice, practice, practice ……

Good websites:
www.mathsisfun.ie
www.projectmaths.ie
www.khanacademy.org ,
www.ixl.com

Maths Grade for First Year – combination of class test and summer exam:

- Class tests = 60%

- Summer Exam = 40%

Natural Numbers

Write down the factors of each of the following numbers:

1. 4
2. 10
3. 35
4. 49

Find the highest common factor of each of the following:

5. 10, 20
6. 8, 12, 36
7. 6, 15
8. 18, 36, 45

Find the lowest common multiple of each of the following:

9. 2, 3
10. 5, 6
11. 2, 3, 4
12. 8, 12, 18

Integers

Calculate each of the following:

1. $11 - 7$
2. $-2 + 6$
3. $-3 - 7$
4. $-9 + 15$
5. $-4\,(-5)$
6. $(-3)^2$
7. $(50 \div 10) + (40 \div 8)$

8. $3(4)^2 + 4(4) + 4$

9. $4(5 - 4)^2$

10. $5\ (3 \times 4 - 5)$

11. $2(-8 + 3)^2$

12. $\frac{(4+12) \div 2}{2(10-8)}$

13. $\frac{15 \div 3+7}{2(-1)^2}$

14. $\frac{36 \div (6-2)+1}{2(10-8)}$

15. $\frac{(4)^2+9(\sqrt{4})-16}{\sqrt{25}+(2)^2}$

Natural Numbers

Calculate each of the following:

1. 2^3

2. $(7 - 4)^2$

3. $4^2 + 2^2$

4. $(18 \div 3)^2$

5. $10 \times 8 \div 4$

6. $(3 + 1)^2 \div (10 - 2)$

7. $4^3 + 3^3$

8. $\sqrt{9} + \sqrt{16}$

9. $5\sqrt{16} + 3\sqrt{4}$

10. $3(4)^2 + 5(2)^2 - 6$

11. $\frac{20}{2+3}$

12. $\sqrt{16 + 9}$

13. $\frac{3 \times 5 + 3}{4+2}$

14. $\sqrt{100} - \sqrt{81}$

15. $\sqrt{3^2 + 4^2}$

16. $\sqrt{9 \times 7 + 1}$

17. $\frac{(5+3)^2}{5 \times 2 + 6}$

18. $3(4)^2 + 4(2)^3 - 17$

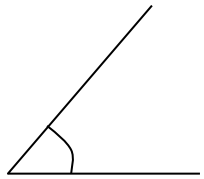
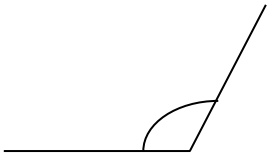
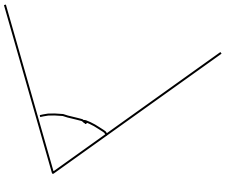
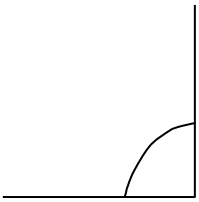
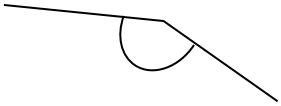
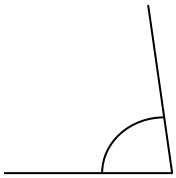
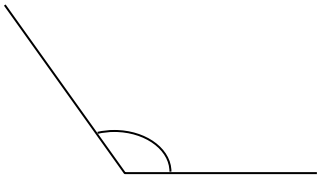
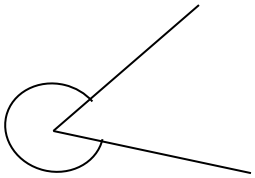
19. $\frac{\sqrt{225} + 3}{\sqrt{36}}$

20. 2^6

Geometry - L.O – To use a protractor to measure angles

Tip: Make sure you line up the cross of the protractor with the corner of the angle.

Challenge: Write whether each angle is an obtuse, acute or right angle. Then use a protractor to measure each angle.

Now can you use the protractor to draw angles of the following degrees?

1) 45°

2) 120°

3) 20°

Fractions:

1 Find the missing values in the following equivalent fractions.

(i) $\frac{3}{4} = \frac{\square}{12}$ (ii) $\frac{2}{7} = \frac{10}{\square}$ (iii) $\frac{5}{8} = \frac{\square}{32}$

(iv) $\frac{6}{11} = \frac{42}{\square}$ (v) $\frac{5}{\square} = \frac{10}{12}$

2 Simplify the following fractions.

(i) $\frac{12}{20} =$ (ii) $\frac{24}{30} =$ (iii) $\frac{14}{21} =$

(iv) $\frac{40}{64} =$ (v) $\frac{18}{42} =$

3 Convert the following improper fractions to mixed numbers.

(i) $\frac{5}{3} =$ (ii) $\frac{15}{4} =$ (iii) $\frac{20}{7} =$

(iv) $\frac{35}{8} =$ (v) $\frac{87}{7} =$

4 Convert the following mixed numbers back to improper fractions.

(i) $3\frac{2}{3} =$ (ii) $2\frac{3}{7} =$ (iii) $4\frac{3}{4} =$

(iv) $5\frac{1}{6} =$ (v) $12\frac{2}{7} =$

5 Work out the following fractions of quantities.

(i) $\frac{2}{3}$ of £24 (ii) $\frac{3}{5}$ of £450 (iii) $\frac{7}{8}$ of 160 kg (iv) $\frac{7}{12}$ of 3600 km

6 Addition.

(i) $\frac{6}{16} + \frac{4}{16}$ (ii) $\frac{3}{4} + \frac{1}{5}$ (iii) $2\frac{1}{2} + 1\frac{2}{5}$ (iii) $3\frac{5}{6} + 2\frac{7}{12}$

7 Subtraction.

(i) $\frac{11}{18} - \frac{4}{18}$ (ii) $\frac{5}{8} - \frac{5}{16}$ (iii) $8\frac{2}{5} - 3\frac{1}{4}$ (iv) $4\frac{1}{3} - 2\frac{3}{8}$

Fractions, decimals and percentages

1. Fill in the gaps on these equivalent fractions. Remember to do the same to the numerator and the denominator

a) $\frac{1}{4} = \frac{}{8}$ b) $\frac{4}{10} = \frac{40}{}$ c) $\frac{3}{7} = \frac{}{21}$

d) $\frac{}{8} = \frac{12}{16}$ e) $\frac{6}{9} = \frac{}{45}$ f) $\frac{8}{} = \frac{32}{60}$

2. Solve the following fraction multiplications and simplify your answers.

Multiply the numerators and multiply the denominators.

Example: $\frac{1}{2} \times \frac{3}{4} = \frac{1\times3}{2\times4} = \frac{3}{8}$

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

b) $\frac{4}{5} \times \frac{6}{8} =$

c) $\frac{7}{10} \times \frac{2}{4} =$

d) $\frac{1}{2} \times \frac{6}{7} =$

e) $\frac{9}{11} \times \frac{2}{3} =$

f) $\frac{5}{8} \times \frac{3}{6} =$

3. Divide the following fractions. Remember "Flip it and kiss it" so flip the second fraction and then multiply them together.

a) $\frac{1}{2} \div \frac{4}{5} =$ b) $\frac{5}{6} \div \frac{7}{3} =$

c) $\frac{7}{10} \div \frac{6}{9} =$ d) $\frac{6}{9} \div \frac{3}{5} =$

4. Change the following into mixed numbers.

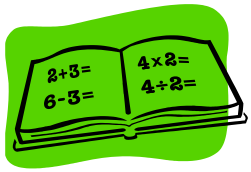
Example: $\frac{9}{7} = \frac{7}{7} + \frac{2}{7} = 1\frac{2}{7}$

a) $\frac{14}{10} =$

b) $\frac{23}{7} =$

c) $\frac{18}{5} =$

d) $\frac{25}{6} =$



5. Multiply these decimals.

Take out the decimal point, multiply, then put the decimal back in.

NO CALCULATORS PLEASE!

a) 4.6x7= b) 3x8.5= c) 7.2x1.3=

d) 3.5x6.9= e) 4.8x2.2= f) 6.2x8.4=

g) 12.5x63.2= h) 23.5x52.1=

6. Order these decimals from smallest to largest.

a) 0.83 0.883 0.08 0.8 0.0088 0.083 b) 0.632 0.634 0.064 0.006 0.6 0.63

7. Copy and complete the table:

	50%	10%	37%	81%	12%
100					
365					
851					
936					

8. Percentage increase: Find the percentage of the amount and then add it on to the original amount.

a) increase £200 by 50%

b) Increase 450cm by 25%

c) Increase 34kg by 72%

d) increase 600miles by 48%

9. Percentage decrease: Find the percentage of the amount and then subtract this from the original amount.

a) Decrease 372cm by 17%

b) Decrease £852 by 20%

c) Decrease 150g by 45%

d) Decrease 47km by 30%

Express these fractions as percentages.

a $\frac{20}{100} =$ % b $\frac{75}{100} =$ % c $\frac{90}{100} =$ %

d $\frac{3}{10} =$ % e $\frac{1}{2} =$ % f $\frac{1}{10} =$ %

Write these percentages as fractions in their simplest form.

a 40% b 75% c 85% d 45% e 32%

f 5% g 1% h 125% i 105% j 2.5%

Decimals	Percentage	Fraction
0.5	50%	50/100=1/2
0.25		
	75%	
0.1		
		60/100
	15%	

Algebra

Simplify the following.

a	$3m + 2k + m$	**b**	$2p + 3q + 5p$	**c**	$4t + 3d - t$	**d**	$5k + g - 2k$
e	$5p + 2p + 3m$	**f**	$2w + 5w + k$	**g**	$m + 3m - 2k$	**h**	$3x + 5x - 4t$
i	$3k + 4m + 2m$	**j**	$2t + 3w + w$	**k**	$5x + 6m - 2m$	**l**	$4y - 2p + 5p$

Expand the following.

a	$3(2a + 3b)$	**b**	$2(4t - 3k)$	**c**	$5(n + 3p)$	**d**	$4(2q - p)$
e	$a(3 + t)$	**f**	$b(4 + 3m)$	**g**	$x(5y - t)$	**h**	$y(3x - 2n)$
i	$a(m + n)$	**j**	$a(3p - t)$	**k**	$x(6 + 3y)$	**l**	$t(2k - p)$

Expand and simplify the following.

a	$3x + 2(4x + 5)$	**b**	$8a - 3(2a + 5)$	**c**	$12t - 2(3t - 4)$
d	$4x + 2(3x - 4)$	**e**	$5t - 4(2t - 3)$	**f**	$12m - 2(4m - 5)$
g	$6(2k + 3) - 5k$	**h**	$5(3n - 2) - 4n$	**i**	$2(6x + 5) - 7x$

Expand and simplify the following expressions.

a	$4(a + b) + 2(a + b)$	**b**	$3(2i + j) + 5(3i + 4j)$
c	$6(5p + 2q) + 3(3p + q)$	**d**	$5(d + f) + 3(d - f)$
e	$7(2e + t) + 2(e - 3t)$	**f**	$2(3x - 2y) + 6(2x + y)$

Substitution

1 If $a = 2$ and $b = 3$, find the value of each of the following.

a	$3a + b$	**b**	$a - 3b$	**c**	$3(b + 4a)$
d	$5(3b - 2a)$	**e**	$b - (a - 2b)$	**f**	$ab - 2(3a - 4b)$

2 If $c = 5$ and $d = -2$, find the value of each of the following.

a	$2c + d$	**b**	$6c - 2d$	**c**	$2(3d + 7c)$
d	$4(3c - 5d)$	**e**	$c + (d - 2c)$	**f**	$cd - 3(2c - 3d)$

3 Given $E = 5n + 8$:

a Find E when $n = 15$

b Make n the subject of the formula

c Find n when $E = 23$

4 Given $S = a + 3$:

a Find S when $a = 7$

b Make a the subject of the formula

c Find a when $S = 24$

5 Given $y = 5x - 2$:

a Find y when $x = 2$

b Make x the subject of the formula

c Find x when $y = 5$

Perimeter and area

Example :

Perimeter = 16 cm

Perimeter = 2 x (Length + Width)
16 cm = 2 x (5 cm + width)
$\frac{16}{2}$ = 5 cm + width
8 = 5 cm + width
width = 8 – 5 = **3 cm**

Area = Length x Width
= 5 cm x 3 cm
= **15 cm²**

Find the area of each rectangle.

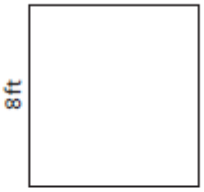
1)

Perimeter = 38 cm
Width = _____
Area = _____

2)

Perimeter = 16 yd
Length = _____
Area = _____

3)

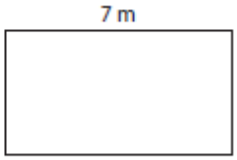


Perimeter = 26 ft
Width = _____
Area = _____

4)

Perimeter = 30 in
Length = _____
Area = _____

5)

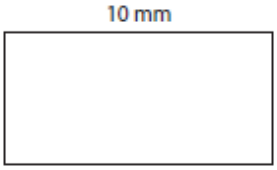


Perimeter = 20 m
Width = _____
Area = _____

6)

Perimeter = 34 yd
Length = _____
Area = _____

7)

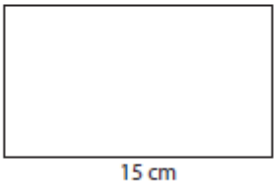


Perimeter = 30 mm
Width = _____
Area = _____

8)

Perimeter = 42 ft
Length = _____
Area = _____

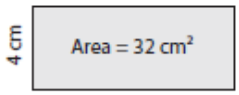
9)



Perimeter = 46 cm
Width = _____
Area = _____

Perimeter and Area

Example :



Area = Length x Width

$32\ cm^2$ = Length x 4 cm

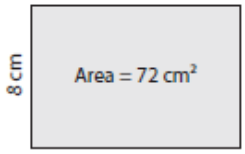
$\frac{32}{4}$ = Length

Length = **8 cm**

Ans = 8 cm

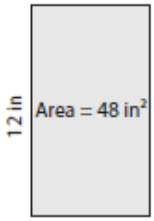
Find the length/width of each rectangle.

1)



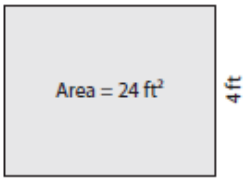
Length = _____

2)



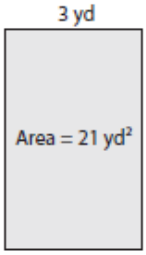
Width = _____

3)



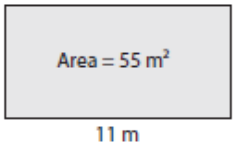
Length = _____

4)



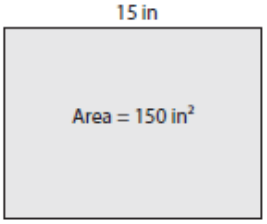
Length = _____

5)



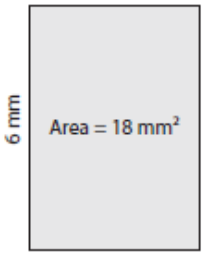
Width = _____

6)



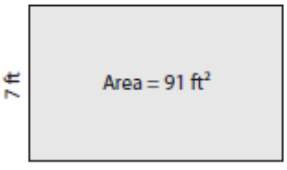
Width = _____

7)



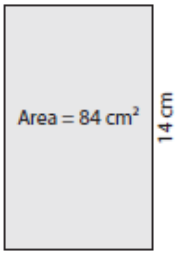
Width = _____

8)



Length = _____

9)

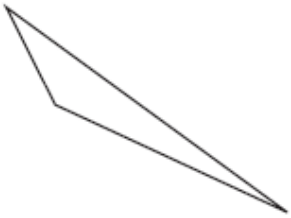


Width = _____

Triangles

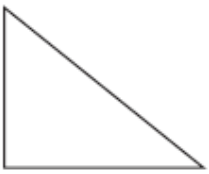
Identifying Triangles

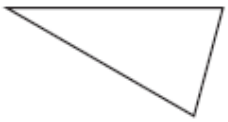
Identify each triangle based on angles. (Acute, Obtuse or Right)

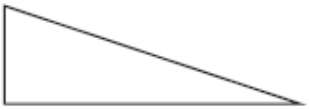
1) 

Obtuse triangle

2) 

3) 

4) 

5) 

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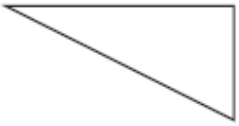
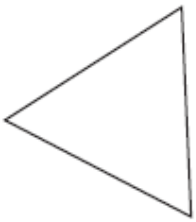
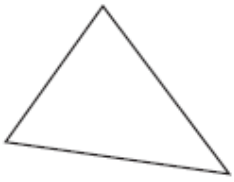
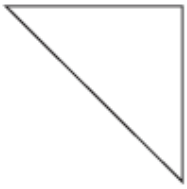
7) 

8) 

9) 

10) 

11) 

12) 

Algebra

Evaluate each algebraic expression for the given value of the variable.

1) $n^2 + 7$ at $n = -3$

2) $4y - 5$ at $y = 6$

3) $r(r - 9)$ at $r = 11$

4) $5(v + 1)$ at $v = -4$

5) $\frac{3u + 1}{2}$ at $u = -7$

6) $(s - 5)^2$ at $s = 13$

7) $b(b + 12)$ at $b = -2$

8) $2q + 3$ at $q = 5$

9) $m^2 - 15$ at $m = 8$

10) $\frac{4(t - 2)}{3}$ at $t = -10$

(c) Simplify each of the following expressions:

(i) $5x + 2y - 7c + 8y - 9x + 13c$

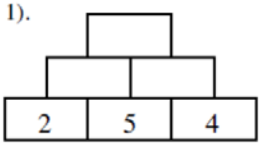
(ii) $6x^2y + 12xy^2 - 4x^2y - 4xy^2$

(iii) (5y)(2)

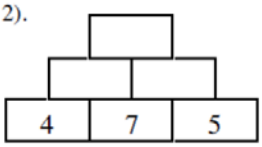
Number Pyramids.

To find the next number, **add** the two bricks below it.
Copy each pyramid and fill in the missing numbers.

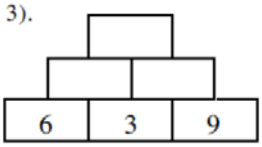
1).



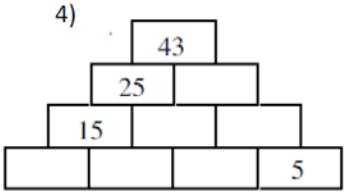
2).



3).



4)



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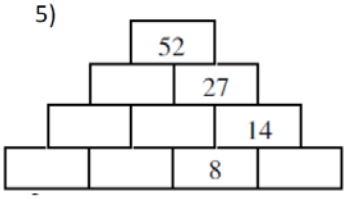
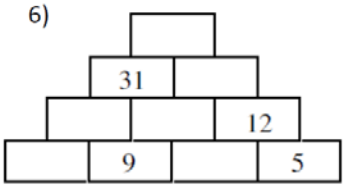


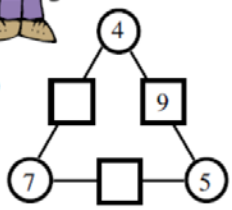
6)



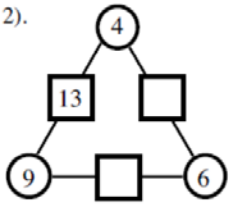
Addon-agons.

Rule: The numbers in the two circles **add up** to the number in the square **between them**.
Copy and complete the diagrams. The first two have been partly done to help you.

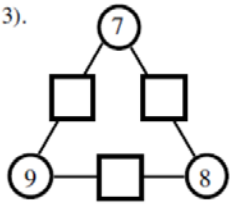
1)



2).



3).



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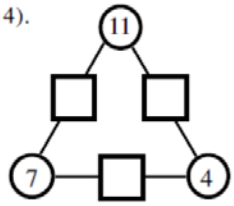
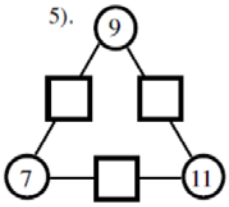
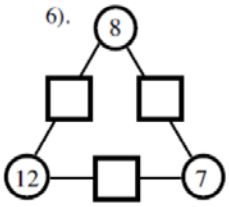


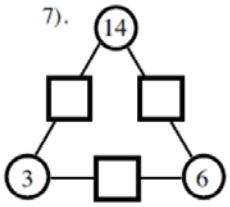
5).



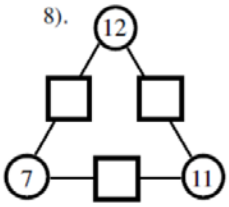
6).



7).



8).



PERCENTAGES HOMEWORK

1. Without a calculator, work out each of the following:
   a) 21% of 650 b) 29% of 46 c) 98% of 234

2. Work out each of the following:

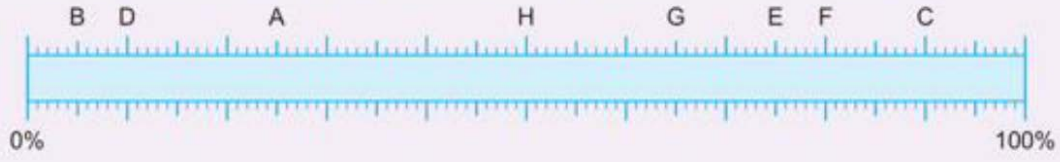
   a) 17% of £406 b) 34% of 1850 students c) 86% of 86 glasses

3. Which is greater:

   a) 14% of 65 *or* 64% of 15? b) 63% of 117 *or* 41% of 171?

Percentages

Match the percentages given with the correct letter on the number line.



(a) 50% (c) 75% (e) 10% (g) 90%
(b) 25% (d) 80% (f) 5% (h) 65%