

Holyhead High School Ysgol Uwchradd Caergybi

Mathematics Department Homework Pack

Year 9 Module 10 Higher

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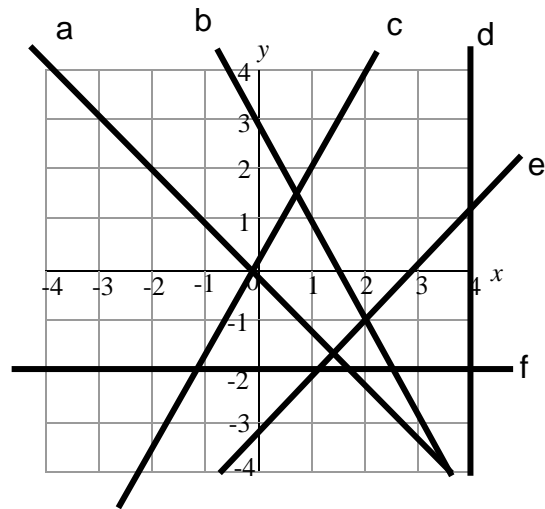
Name

Class Teacher

1.

a. Match the line to the equation

- i. $x = 4$
- ii. $y = -2$
- iii. $y = -2x + 3$
- iv. $y = 2x$
- v. $y = -x$
- vi. $y = x - 3$



[6]

b. Match the following statements to the graphs in the box below

[7]

$y = 2x + 3$	$y = x - 4$	$y = -3x$
$y = 4x + 2$	$y = \frac{1}{2}x - 2$	$y = 2x - 3$

- i. Has a negative gradient
- ii. Has a gradient of 4
- iii. Intercepts the y-axis at -3
- iv. Has a gradient of 1
- v. Intercepts the y-axis at 3
- vi. Has the smallest (shallowest) gradient
- vii. Which two lines are parallel

1. By completing following tables (or otherwise) draw the lines on the graph below [12]

a. $y = x + 3$

x	-2	0	2
y			

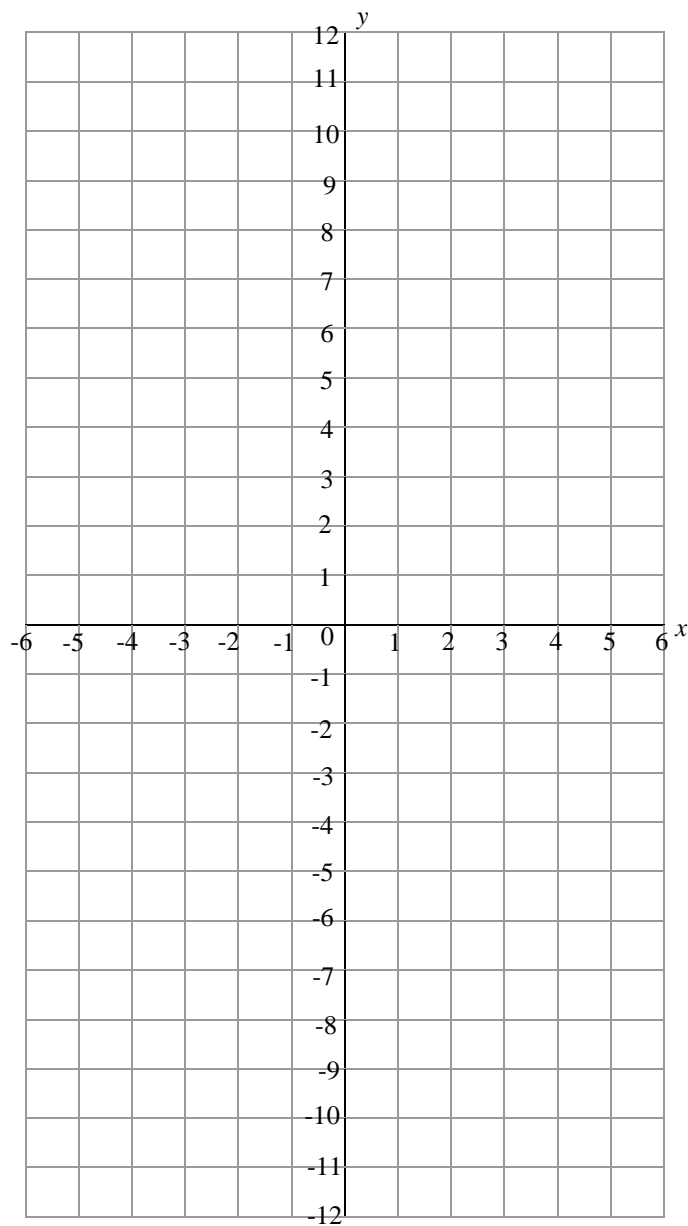
[2 marks for each table, 2 marks for each plot]

b. $y = 2x - 4$

x	-2	0	2
y			

c. $y = -2x$

x	-2	0	2
y			



Name

Algebra - 1

$\frac{35}{35} \times 100 = \dots\%$

1. Simplify the following $5p \times 4p \times 3p$ [2]

2. Expand the following

a. $6(x + 2)$ [2]

b. $2x(x - 5y)$ [2]

c. $5(x + 3) + 7x$ [3]

d. $5(4x - 2) + 4(2x + 3)$ [3]

e. $3(3a + 2) - 2(3a - 5)$ [3]

3. Expand and Simplify

a. $(x + 5)(x + 3)$ [3]

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b. $(x + 2)(x - 6)$ [3]

.....

c. $(x - 4)(x + 7)$ [3]

.....

d. $(x - 3)(x - 5)$ [3]

.....

4. Factorise

a. $5x + 30$ [1]

b. $x^2 + 5x$ [1]

c. $5x^2 + 15x$ [2]

d. $8xy^2 - 12x^2y$ [2]

Name

Algebra - 2

$\frac{\dots}{20} \times 100 = \dots\%$

- 1. The total train fare, £*T*, for a group going to the Chester is given by the formula
 $T = 7A + 4C$ where *A* is the number of adults *C* is the number of children

Calculate the cost for two Adults and five children
[2]

- 2. To Calculate the volume of a cone use the formula $V = \frac{\pi r^2 h}{3}$
 Calculate the Volume of a cone with $r = 7.5\text{cm}$, $h = 10\text{cm}$
[2]

- 3. Use the formula $v = u + at$ to calculate **v** when $u = 12$, $a = 9.8$ and $t = 5$
[2]

- 4. Rearrange the following formula to make **a** the subject $F = ma$
 and then calculate **a** if $F = 30$ and $m = 12$
[2]

- 5. Make **t** the subject of the following formula $m = t - 13$
 and then calculate **t** when $m = 63$
[2]

- 6. Make **h** the subject of the following formula $C = 8h + 25$
 and then calculate **h** if $C = 290$
[3]

- 7. The formula $a = rt^2$, rearrange to make **t** the subject
 and then calculate **t** if $a = 216.75$ and $r = 3$
[3]

- 8. The formula $t = \frac{h}{m}$, rearrange to make **h** the subject
 and then calculate **h** if $t = 12.5$ and $m = 4.3$
[4]

Name

Money

$$\frac{\dots}{25} \times 100 = \dots\%$$

1. Kate has a £20 note. A notebook costs £1.60.
 She buys as many notebooks as she can. How much money will she have left over? [3]

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2. A ring is bought for £354. It is then sold for a profit of 24%.
 Calculate the selling price of the ring. [3]

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3. What percentage is £146.32 of £236? [2]

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4.

The diagram shows a dining table and four chairs. To the left, an oval contains the text: Cash Price £1240. To the right, a rectangular box contains the text: Dining Table and 4 Chairs. Below the table, a rounded rectangular box contains the text: Hire Purchase Price Deposit: 15% of Cash Price + 36 monthly payments of £42.

- Calculate the total hire purchase price. [4]

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5. Sian invests £7000 for 3 years at 4% per annum compound interest.
 Find the compound interest earned in the 3 years. [4]

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6. a. Lewis changed £1500 into Australian dollars (\$), when the rate of exchange was £1 = \$2.24. How many Australian dollars did he get? [2]

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b. On his return he had \$120 left. How much would he get for these if the exchange rate is £1 = \$2.27? [2]

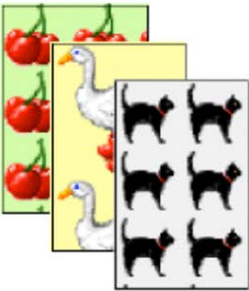
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7. **Poster**

POSTERS BY POST

All posters £ 2.75 each

postage and packing extra



Posters cost £2.75 each
 You have to pay postage and packing charges as well.
 These are:

Postage and packing	
1 to 10 posters	£ 3.25
11 to 20 posters	£ 6.00
21 to 30 posters	£ 8.75
over 30 posters	£ 11.50

Zeke has £50

How many posters can he get by post if he spends £ 50?

..... [5]

Name

Inequalities

$$\frac{\dots}{25} \times 100 = \dots\%$$

1. Solve these inequalities [8]

a. $x + 5 > 7$ b. $x - 7 \leq 1$

b. $\frac{x}{4} \geq 8$ $8x < 16$

c. $3x < 21$ $\frac{x}{6} \geq -4$

d. $x + 12 < 7$ f. $x - 4 \geq -3$

2. Solve these inequalities [6]

a. $7x - 4 < 38$

b. $5x + 9 > 24$

c. $4x - 13 \leq 23$

3. Which of these values of x make the inequality $3x + 4 > 10$ true? (circle the correct value) [1]

- a. $x = 2$ b. $x = 15$ c. $x = 0$ d. $x = 3.5$

4. Write down a value of x that makes both of these inequalities true [2]

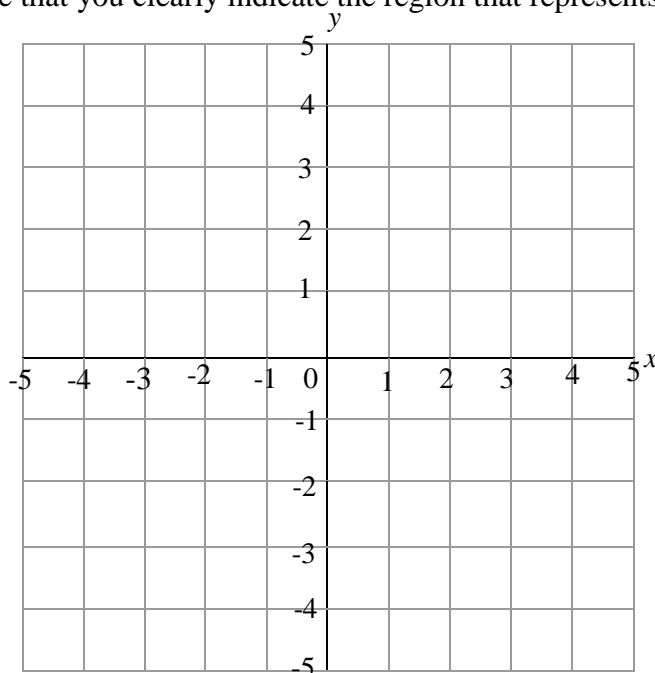
$x + 5 > 17$ $3x > 33$

.....

5. On graph paper, draw the region which satisfies all of the following inequalities. [4]

$x \leq 4$ $y \geq 1$ $y \leq x$

Make sure that you clearly indicate the region that represents your answer.



Name

Numeracy - 1

$$\frac{\dots}{16} \times 100 = \dots\%$$

Last December, a company set up an outside ice rink in the town centre.
The rectangular ice rink has a length of 20 metres and a width of 15 metres.
The company has to allow 4 square metres for every skater on the ice rink.
What is the maximum number of skaters allowed on the ice rink at any time?

[4]

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All the skaters are allowed 30-minute time slots on the ice.
The first time slot is from 10:00 a.m. until 10:30 a.m.
The second time slot is from 10:30 a.m. until 11:00 a.m.
All the other time slots start immediately after the previous time slot finishes.
The last time slot ends at 10:00 p.m.

What is the maximum number of skaters that could use the ice rink on any day?

[4]

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The numbers of skaters who attended on Saturdays and Sundays during December are displayed in the following table.

	Sun Dec 1 st	Sat Dec 7 th	Sun Dec 8 th	Sat Dec 14 th	Sun Dec 15 th	Sat Dec 21 st	Sun Dec 22 nd	Sat Dec 28 th	Sun Dec 29 th
Children	576	444	486	505	529	794	567	624	785
Adults	554	468	594	661	683	633	468	920	869

What percentage of the total available places were filled on Sunday, 29th December?
Give your answer correct to the nearest whole number.

[4]

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What is the mean and range of the number of **children** who skated, per day, on Saturdays and Sundays during December?

[4]

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Mean - Sat

Range – Sat

Mean - Sun

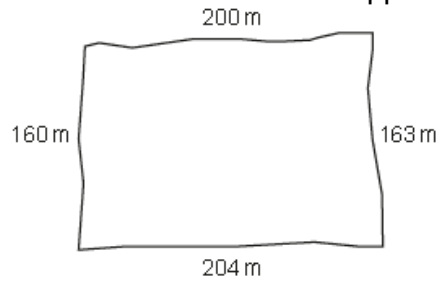
Range – Sun

Name

Numeracy - 2

$$\frac{\dots}{18} \times 100 = \dots\%$$

A farmer is going to plant some seeds in a field whose approximate shape and dimensions are shown below.



You are given that 1 acre is about 4050 m².

Calculate the approximate size of the field in acres, giving your answer correct to the nearest whole number.

State clearly what assumption you are making about the shape of the field and the dimensions you are using in your calculations. [6]

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Wheat, when gathered, is measured in bushels.

This year the farmer planted 12 acres of land with wheat and harvested 460 bushels.

Next year he intends to plant 21 acres of land with wheat.

How many bushels should he expect to harvest, given that all conditions are the same? [2]

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The farm has a herd of 80 cows which are kept on three fields.

The largest of these fields is 18 acres.

The next field is $\frac{2}{3}$ of the size of the largest field.

The smallest field is $\frac{1}{2}$ the size of the largest field.

Approximately how many cows per acre does the farmer keep? [4]

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The farm had 200 sheep that had lambs last spring.

Three-quarters of the sheep had twins, 35 had triplets and the rest had just one lamb each.

Sadly, 5% of all the lambs born did not survive. All the others were sold.

How many lambs in total were sold? [6]

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