Maths
Fractions and inequalities

It is not necessary to carry out all the activities contained in this unit.
Please see *Teachers' Notes* for explanations, additional activities, and tips and suggestions.

| Theme	Fractions and inequalities
Levels	**A1 – B1**
Language focus	Key vocabulary, word identification, sentence structure, extracting information from text, writing text, grammar.
Learning focus	Using Maths textbooks and accessing curriculum content and learning activities.
Activity types	Matching, word identification, structuring sentences and text, cloze, multiple choice, reading comprehension, categorising vocabulary, recording learning, developing a learning resource.
Acknowledgement	**Extracts from *Shortcuts to Success. Maths. Junior Certificate Ordinary Level*. Mark Halpin.** Gill & Macmillan. We gratefully acknowledge Gill & Macmillan for the right to reproduce text in some of these activities.
Learning Record	A copy of the Learning Record should be distributed to each student. Students should: 1. Write the subject and topic on the record. 2. Tick off/date the different statements as they complete activities. 3. Keep the record in their files along with the work produced for this unit. 4. Use this material to support mainstream subject learning.

Making the best use of these units

- **At the beginning of the class,** make sure that students understand **what** they are doing and **why**. '*We are doing the exercise on page (12) to help you to remember key words / to help your writing skills / to help with grammar'* etc.

- You can create your **personal teaching resource** by printing these units in full and filing them by subject in a large ring binder.

- **Encourage students** to:

    o Bring the relevant **subject textbooks** to language support class. It does not matter if they have different textbooks as the activities in these units refer to vocabulary and other items that will be found in all subject textbooks. These units are based on curriculum materials.
    o Take some **responsibility for their own learning** programmes by:

Developing a **personal dictionary** for different subjects, topics, and other categories of language, on an on-going basis. This prompt is a reminder.
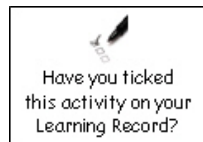
Recording what they have learnt on the *Learning Record,* which should be distributed at the start of each unit.

Keeping their own **files** with good examples of the work produced in language support for different subjects and topics. This file will be an invaluable **learning resource** in supporting mainstream learning.

- Don't forget that many of the activities in these units are suitable as **homework** tasks, for **self-study,** or for use in the **subject classroom** with the agreement of the subject teacher.
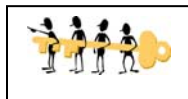
Indicates that answers may be found at the end of the unit.

NAME: _____ DATE:_____
MATHS: Fractions and inequalities

Keywords

The list of keywords for this unit is as follows:

Nouns	to use
answer	
calculator	must
decimal place	
decimal point	**Adjectives**
decimals	appropriate
denominator	both
direction	common
equations	correct
error	decimal
estimation	exact
example	exactly
fraction	important
inequalities	lowest
LCM (Lowest Common Multiple)	multiple (adjective)
line	negative
multiple *(noun)*	normal
notation	positive
number line	real
number/numbers (no/nos)	shaded
problem	whole
questions	
real numbers	
shaded line	**Adverb**
type	always
value	when
whole numbers	
	Other
Verbs	hence = so = therefore
to add	both sides
to change	the same manner
to complete	the same way
to evaluate	
to find	**Symbols**
to graph	**=** equals
to include	**+** plus
to multiply	**≤** less than or equal to
to rewrite	**<** less than
to shade	**≥** greater than or equal to
to show	**>** greater than
to simplify	**→** goes to
to solve	
to subtract	

Vocabulary file 1

This activity may be done in language support class or in the mainstream subject classroom.

Word	Meaning	Word in my language
inequalities		
line		
complete		
rewrite		
simplify		
negative		
numbers		

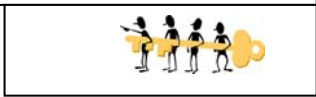# Vocabulary file 2

This activity may be done in language support class or in the mainstream subject classroom.

Word	Meaning	Word in my language
denominator		
shaded		
whole		
type		
value		
graph		
subtract		

MATHS: Fractions and inequalities

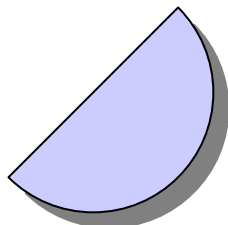|	
Level: A1 **Type of activity:** pairs or individual	**Focus:** vocabulary **Suggested time:** 10 minutes

Working with words

1. Tick the correct answer

☐ a) this is a third (⅓)

☐ b) this is a half (½)

☐ c) this is two thirds (⅔)

☐ d) this is a whole
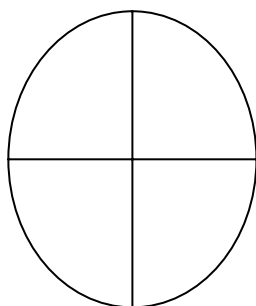
☐ a) this is a divided into thirds

☐ b) this is a divided into quarters

☐ c) this is a divided into sixths

☐ d) this is a divided in half

2. Find these words in your textbook.

Write your own explanation for these words. Then write the word in your own language. Use your dictionary if necessary.
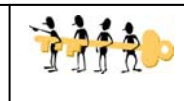
Word	Page in textbook	Explanation	In my language
fraction			
shaded			
unshaded			
value			

Check that these key words are in your personal dictionary.

Level: A1 **Type of activity:** pairs or individual	**Focus:** vocabulary, sentence structure **Suggested time:** 20 minutes

Picture Sentences

1. Tick the correct answer

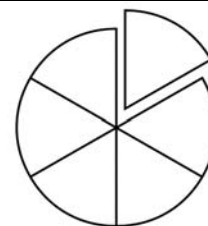a) This is a third.
b) This is a sixth.
c) This is a half.
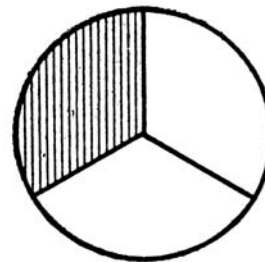
a) This is an eighth.
b) This is a quarter.
c) This is a half.
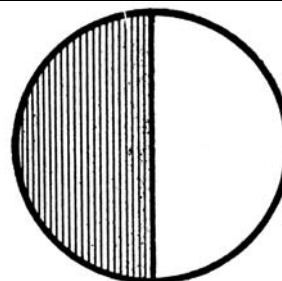
a) This is two thirds.
b) This is five eights.
c) This is a sixth.

2. Put these words in the correct order to form sentences.

shaded the part is $\frac{1}{4}$

_____

unshaded $\frac{3}{4}$ is the part

_____

$\frac{3}{4}$ $\frac{1}{4}$ examples are fractions of and

_____

Level: A1 / A2 **Type of activity:** pairs or individual	**Focus:** word identification, vocabulary **Suggested time:** 20 minutes

Odd One Out

1. Circle the word which does not fit with the other words in each line.

Example: *apple   orange   banana   (taxi)*

numbers   bread   real   fractions

denominators   green   common   lowest

add   subtract   multiply   eat

leaves   negative   positive   fractions

2. Find these words in your textbook. Then put them in short sentences in your own words. Use a dictionary if necessary.

to complete   _____

to evaluate   _____

to graph   _____

to solve   _____

to rewrite   _____

Check that these key words are in your personal dictionary.

Level: A2 / B1 **Type of activity:** individual	**Focus:** key vocabulary **Suggested time:** 20 minutes

Maths Keywords

1. Fill in the missing letters of the keywords listed below.
On the line next to the keywords, write down whether this word is a noun, an adjective or a verb.

ne_ _ti_e   _____

su_ _ra_t   _____

ine_ _alit_es _____

fra_ _i_ns _____

2. Write as many words as possible related to **percentages / this unit.**
You have 3 minutes!

_____

_____

_____

_____

_____

MATHS: Fractions and inequalities

| **Level**: A1 / A2 **Type of activity:** pairs or individual | **Focus:** key vocabulary, spelling **Suggested time:** 20 minutes |

Unscramble the letters

1.   When a number in Maths is greater than zero   STOVIIPE

   Answer _____

2.   Numbers that are not of the same value   LIUAEINTIQES

   Answer _____

3.   A part of a number   NACFIRTO

   Answer _____

4.   Take one number away from another number   BSCUTRAT

Answer _____

Solve the secret code

English=	A	C	E	F	I	N	O	R	S	T	U
Code=	B	X	Y	J	G	Q	P	D	L	K	W

example: (code) JGDLK = FIRST (English)
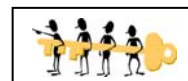
JDBXKGPQL BDY JWQ =

_____

Level: A2/B1 **Type of activity:** pairs or individual	**Focus:** vocabulary, sentence structure, reading comprehension **Suggested time:** 30 minutes

Completing sentences

The sentences on this page are all instructions from your textbooks. Fill in the blanks in these sentences. Use words from the Word Box below.

1.   Express the following _____ in their simplest form.

2.   What fraction of each of the following _____ is shaded?

3.   Copy the fractions and fill in the _____ numbers to make equivalent fractions.

4.   Write each of the _____ fractions as an equivalent fraction with denominator 36.

5.   _____ each of the improper fractions as mixed numbers.

6.   _____ each of the following fractions to its simplest from.

7.   Express each of these _____ as an improper fraction.

8.   _____ each of these fractions in order of size.

9.   _____ the operation and simplify your answer in each of the following.

10.   Express 18 minutes as a fraction of an _____.

Word box

hour	perform	numbers	following	diagrams
fractions	reduce	missing	express	rewrite

Level: A2 / B1
Type of activity: individual

Focus: topic information, reading comprehension
Suggested time: 30 minutes

Multiple choice

Read the text below and choose the best answers.

Text: SOLVING INEQUALITIES

Inequalities are solved in exactly the same way as normal equations except:

Important

When the x term is negative we must:

1. Change the sign on both sides of the inequality.
2. Change the direction of the inequality.

Example: -3x ≤ 6, **so** 3x ≥ -6, **so** x ≥ -2

Example 1

Solve 2(x + 1) ≤ 10, x ∈ N and graph on the appropriate number line.

2(x + 1) ≤ 10

2x + 2 ≤ 10

2x ≤ 10 – 2

2x ≤ 8

x ≤ 4

1. Are inequalities solved the same way as normal equations?
   a)   yes, except when x is negative   b)   yes, always
   c)   no   d)   only in the summer

2. What should you do if x is negative?
   a)   wash your hands   b)   change the sign on one side
   c)   rub your eyes   d)   change the sign on both sides

3. What should you do in example 1?
   a)   nothing   b)   multiply the equation
   c)   solve the equation   d)   subtract

4. Should you change the direction of an inequality when x is negative?
   a)   Yes   b)   No

5. Should you graph the equation on the appropriate number line?
   a)   Yes   b)   No

MATHS: Fractions and inequalities

Level: B1 **Type of activity:** individual and pairs

Focus: much/many, countable and uncountable nouns **Suggested time:** 30 minutes

Grammar points

Much many

1. Look at the two questions taken fro your textbook:

An oil tank is ¾ full and holds 896 litres.
How many litres can the tank hold?

Alan spend ⅞ of his money. If he had €100 left, how much money had he at first?

Why did we say **how <u>many</u> litres?** but **how <u>much</u> money?**

Discuss your answer with your teacher and other students. You can check your answer in the Answer key.

2. Look at the following pairs of words and divide them into two lists:

<u>How much?</u>   <u>How many?</u>

pills/medicine

bread/potatoes

work/jobs

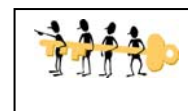time/hours

five euro notes/money

minutes/time

problems/trouble

information/facts

reports/news

chairs/furniture

kisses/love

Grammar points

Much/many continued.

3. The following are questions from your textbooks, complete with the word much or many.

- How _____ pupils live less than 6km from the school?

- How _____tablets should be put into the bottle so that the weight would be ⅔of the total weight?

- Anne spent ⅝ of her money and had €16.40 left. How _____ had she at first?

- How _____ 1¼ litre cartons of orange juice can be filled from a container holding 40 litres?

- Emer ought a three hour blank tape. She recorded ¾ of an hour and ⅔ of an hour on the tape. How _____ time was left?

4. Now it's your turn! Go to your maths textbook. Find 5 examples of questions with **how much** or **how many**. Rewrite the sentences with blanks instead of much/many. Swap your sentences with another student's and fill in one another's sentences.

5. Imagine your class or your family is going on a trip – a   camping expedition. Make a list of all everything you need to bring with you (it will be more fun if you do this in pairs or small groups). There must be at least 12 items on your list! Show you list to other students. For each item on the list he or she must ask **how much?** or **how many?** of each item you are to bring.

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MATHS: Fractions and inequalities

Levels: A1 and A2
Alphaboxes
Get your students to find **one** word beginning with each of the letters of the alphabet from their textbook. They should also be encouraged to write down the word in their own language.

a	b	c
d	e	f
g	h	i
j	k	l
m	n	o
p	q	r
s	t	u
v	w	xyz

Word Search

Level: All levels

Find the words in the box below.

```
K G Z S C O M P L E T E         Q S V B K H
F       Z I F U W I U             W U N R
O       L O W E S T C V             M X
B       C V B W I Y N X       M B     U R
O       C N G S D E U D       A J     V O
P R E W R I T E M J Q G M M W M K C O M M O N K
R E I N E Q U A L I T I E S F L I N E S V C J I Q P
B J P J A U K V G M R L R O U A S C N U M B E R S I
P S U B T R A C T V D U F T U N E G A T I V E M P O
H Q S O L V E U Z Q G T J P V E V A L U A T E D A F
G F R X V T F R A C T I O N S E E Q D O L I H S R
Q I V P E T P A D D T P O S I T I V E K T Q X P Q
P Y U M U L T I P L E G R O M U L T I P L Y O B W
S I M P L I F Y R E A L P X A F P R W W J U R S D B
Q I H T K Y S Z N O U F H O S Z S C C C G G Z Y A I P
D E C I M A L J W T X K R N C L N O H D L X G R A P H R
K H F I N D H L C M N J C K D E N O M I N A T O R S H D Z
    P B T V R   X D X O V   L I T N S   U G J P L
    Z L B     T X C     S B E     P U O
```

ADD	FIND	LOWEST	REAL
COMMON	FRACTIONS	MULTIPLE	REWRITE
COMPLETE	GRAPH	MULTIPLY	SIMPLIFY
DECIMAL	INEQUALITIES	NEGATIVE	SOLVE
DENOMINATORS	LCM	NUMBERS	SUBTRACT
EVALUATE	LINES	POSITIVE	

Play Snap:

Do up Snap cards with 2 sets of the same keywords on them, shuffle them and let your students play cards.
Get the students to write the words for you.

✄

fraction	**fraction**
decimal	**decimal**
simplify	**simplify**

real

real

rewrite

rewrite

complete

complete

negative

negative

numbers

numbers

lowest

lowest

multiple	**multiple**
positive	**positive**
add	**add**

Answer key

Working with words, page 6
1. b,b

Picture sentences, page 7
1. a,c,c
2. The shaded part is ¼.
The unshaded part is ¾.
¾ and ¼ are examples of fractions..

Odd One Out, page 8
Bread, green, eat, leaves

Maths key words, page 9
negative (adjective), subtract (verb), inequalities (noun), fractions (noun)

Unscramble the letters, page 10
Received, profit, telephone, prepare
Secret Code: overheads are expensive

Completing Sentences, page 11
Express the following **fractions** in their simplest form.

What fraction of each of the following **diagrams** is shaded?

Copy the fractions and fill in the **missing** numbers to make equivalent fractions.

Write each of the **following** fractions as an equivalent fraction with denominator 36.

Express each of the improper fractions as mixed numbers.

Reduce each of the following fractions to its simplest from.

Express each of these **numbers** as an improper fraction.

Rewrite each of these fractions in order of size.

Perform the operation and simplify your answer in each of the following.

Express 18 minutes as a fraction of an **hour**.

Multiple choice, page 12
1a,2d,3c,4a,5a

Grammar points, page 13
1. We use **many** with a **countable** noun (a noun that can have a/an before it and can be used both in the singular and plural).
We use **much** with an **uncountable** noun (a noun that cannot have a/an before it and cannot be used in the plural).
2. How much medicine, bread, work, time, money, time, trouble, information, news, furniture, love.
How many pills, potatoes, jobs, hours, five euro notes, minutes, problems, facts, reports, chairs, kisses.

Grammar points, page 14

- How **many** pupils live less than 6km from the school?

- How **many** tablets should be put into the bottle so that the weight would be ⅔of the total weight?

- Anne spent ⅝ of her money and had €16.40 left. How **much** had she at first?

- How **many** 1¼ litre cartons of orange juice can be filled from a container holding 40 litres?

- Emer ought a three hour blank tape. She recorded ¾ of an hour and ⅔ of an hour on the tape. How **much** time was left?

MATHS: Fractions and inequalities

Word Search:

```
K G Z S C O M P L E T E           Q S V B K H
F           Z I F U W I U             W U N R
O           L O W E S T C V           M X
B           C V B W I Y N X     M B     U R
O           C N G S D E U D     A J     V O
P R E W R I T E M J Q G M M W M K C O M M O N K
R E I N E Q U A L I T I E S F L I N E S V C J I Q P
B J P J A U K V G M R L R O U A S C N U M B E R S I
P S U B T R A C T V D U F T U N E G A T I V E M P O
H Q S O L V E U Z Q G T J P V E V A L U A T E D A F
G F R X V T F R A C T I O N S E E Q D O L I H S R
Q I V P E T P A D D T P O S I T I V E K T Q X P Q
P Y U M U L T I P L E G R O M U L T I P L Y O B W
S I M P L I F Y R E A L P X A F P R W W J U R S D B
Q I H T K Y S Z N O U F H O S Z S C C C G G Z Y A I P
D E C I M A L J W T X K R N C L N O H D L X G R A P H R
K H F I N D H L C M N J C K D E N O M I N A T O R S H D Z
    P B T V R     X D X O V     L I T N S     U G J P L
    Z L B         T X C         S B E         P U O
```