

NAME: _____ DATE: _____
 MATHS: Angles and constructions

Maths

Angles and constructions

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	Angles and constructions	
All students: Activities that are suitable for Learning Support, Language Support and the Mainstream Subject Class include:	Keywords	3
	Vocabulary File	4-5
	Completing Sentences	11
	Multiple Choice	12
	Wordsearch	15
Learning support and Language support: Activities suitable for students receiving Learning or Language Support include:	Working with words	6
	Picture Sentences	7
	Odd One Out	8
	Maths Keywords	9
	Unscramble the letters	10
	Alphaboxes	14
	Play Snap	16-19
Language support: Additional activities for Language Support:	Grammar points	13
Levels for Language Support	A1 – B1 The language level of each activity is indicated in an information box.	
Learning focus	Using Maths textbooks and accessing curriculum content and learning activities.	
Acknowledgement	The <i>English Language Support Programme</i> acknowledges the permission of Gill and Macmillan to reproduce excerpts from <i>Shortcuts to Success. Maths. Junior Certificate Ordinary Level</i> by Mark Halpin.	

Note: The categorisation of activities is indicative only and should not prevent teachers from using any activities that are considered suitable for a particular group of students.

Making the best use of these units

Learning Record

A copy of the Learning Record should be distributed to each learning support and language support 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.

Introduction of a topic or activity should ensure that students understand **what** they are doing and **why**. Many students will have some difficulty in understanding both the language in the activity and the instructions/purpose for carrying out the activity.

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:

- Bring the relevant **subject textbooks** to learning/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.
- Take some **responsibility for their own learning** programmes by:



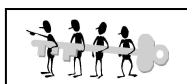
Developing a **personal dictionary** for different subjects, topics, and other categories of language, on an on-going basis. This prompt is a reminder.



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 for different subjects and topics. This file will be an invaluable **learning resource** in supporting mainstream learning.



Indicates that answers may be found at the end of the unit.

Don't forget that many of the activities in these units are also suitable as **homework** tasks or for **self-study**.

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Keywords

The list of keywords for this unit is as follows:

Nouns

angle/angles
arc/arcs
bisector
centimetre (cm/cms)
compass
construction
diagram
diameter
hypotenuse
isosceles
line
metre (m/ms)
millimetre (mm/mms)
parallelogram
point (pt)
protractor
semicircle
triangle

Verbs

to angle (verb)
to construct
to draw
to evaluate
to extend
to measure
to show
to swing

Adjectives

alternate
angled
constructed
end
equal
formed
measured
middle
move
opposite
perpendicular
rough
straight

Other

from
greater than
vertically

Symbols

Δ triangle
 $|ab|$ length from point a to point b
 $\angle abc$ angle formed as you move from point a to point b to point c
 70° 70 degrees

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Vocabulary file 1

Word	Meaning	Note or example*
angle		
arc		
centimetre		
compass		
diagram		
diameter		

*You may wish to write a sentence or phrase, make a note of the page in your textbook where this word appears or, if English is not your first language, provide a translation into your language.



Get your teacher to check this and then file it in your folder so you can use it in the future.

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Vocabulary file 2

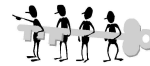
Word	Meaning	Note or example
semicircle		
triangle		
alternate		
opposite		
perpendicular		
rough		



Get your teacher to check this and then file it in your folder so you can use it in the future.

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Language Level: A1
Type of activity: pairs or individual
Suggested time: 10 minutes



Working with words

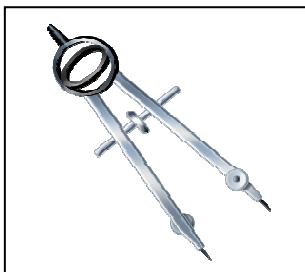
1. Draw lines in the boxes, then compare them with other students

horizontal lines (*level and flat*)

vertical lines (*pointing straight up*)

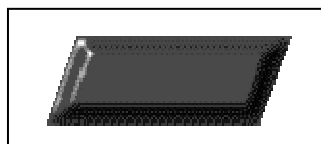
diagonal lines (*straight and sloping*)

2. Answer the following questions: this is



- a) a knife
- b) a fork
- c) a compass

- a) a triangle
- b) parallelogram
- c) a sphere



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Language Level: A1

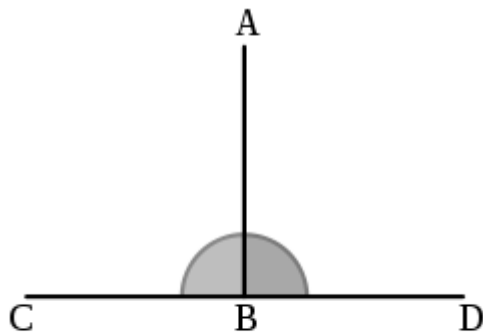
Type of activity: pairs or individual

Suggested time: 30 minutes



Picture Sentences

1. Tick the correct answer



1).

a) the line AB is perpendicular to the line CD

b) the line AD is perpendicular to the line CD

c) the line AC is perpendicular to the line CD

2).

a) the angles are each 30 degrees.

b) the angles are each 90 degrees

c) the angles are each 180 degrees

Put these words in the correct order to form instructions

parallelogram the area calculate of the

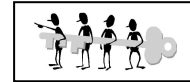
angle the copy below

construction all lines show clearly

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Language Level: A1 / A2
Type of activity: pairs or individual
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**

compass arc phone point

Isosceles triangle line cold angle

parallelogram hungry equal opposite

draw angle line grey

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

to construct _____

to draw _____

to extend _____

to measure _____

to show _____



Check that these key words are in your personal dictionary.

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Language Level: A2 / B1
Type of activity: individual
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.

di__et_r _____

alt__n_te _____

hy__ten_se _____

cons__uct _____

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

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Language Level: A1 / A2
Type of activity: pairs or individual
Suggested time: 20 minutes



Unscramble the letters

1. This is a small unit of measurement TIECREMENT

Answer _____

2. This is used to draw circles and arcs MASPSOC

Answer _____

3. When you work out the size of something EMEURSA

Answer _____

4. On the other side POSTOPIE

Answer _____



Solve the secret code

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

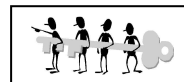
example: (code) JUBQL = STAMP (English)

YKBE BZ BKX EGU F B XVQLBJJ! =

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Language Level: A2/B1
Type of activity: pairs or individual
Suggested time: 30 minutes



Completing sentences

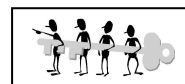
The sentences on this page are all instructions from your textbooks. Fill in the blanks in these sentences. Use words from the Word Box below. If you find this exercise tricky, look though your textbook to help you.

1. A _____ line is equal to 180° .
2. Vertically _____ angles are equal.
3. The opposite sides of a _____ are equal in measure.
4. The _____ of a parallelogram bisect each other.
5. To _____ means to cut into two equal parts.
6. The _____ of a parallelogram is (base) \times (perpendicular height).
7. The diameter passes through the _____ of a circle.
8. There are only _____ different constructions which you have to know.
9. All constructions lines should be drawn in _____.
10. Constructions lines account for a lot of marks, so show them _____.

Word Box

bisect	area	clearly	centre
four	pencil	straight	opposite
parallelogram		diagonals	

Language Level: A2 / B1
Type of activity: individual
Suggested time: 30 minutes



Multiple choice

CONSTRUCTING TRIANGLES

Type 1

Construct $\triangle abc$ such that $|ab| = 4$ cm, $|bc| = 6$ cm and $|ac| = 5$ cm.

- (1) Draw a rough diagram of what $\triangle abc$ should look like.
- (2) Draw $[ab]$ 4 cm in length. Put the compass on pt. a . Draw an arc 5 cm from a .
Put the compass on pt. b . Draw an arc 6 cm from b .
- (3) Pt. c is the point where the arcs meet.

Type 2

Construct $\triangle mnp$ such that $|mn| = 6$ cm, $|np| = 7$ cm and $\angle mnp = 72^\circ$.

- (1) Draw a rough diagram. Because n is the middle letter, $\angle mnp$ is at the point n .
- (2) Draw $[mn]$. We pick this line because it includes the point n .
- (3) At pt. n , use a protractor to measure an angle of 72° . Draw a line to show the angle.
- (4) From pt. n draw an arc 7 cm.
- (5) Point p is where the arc and the construction line intersect.

1. When constructing a triangle, what do you draw first?

- | | |
|--------------|--------------------|
| a) nothing | b) a rough diagram |
| c) a compass | d) a protractor |

2. Where is pt. c ?

- | | |
|-------------------|------------------------|
| a) on pt. b | b) nowhere |
| c) on the compass | d) where the arcs meet |

3. Where should you use a protractor to measure an angle of 72° ?

- | | |
|---------------|-----------------------|
| a) at pt. n | b) on a rough diagram |
| c) on pt. p | d) nowhere |

4). Should you draw an arc 4 cm from pt. n ?

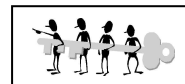
- | | |
|--------|-------|
| a) Yes | b) No |
|--------|-------|

5). Should point p be where the arc and the construction line intersect?

- | | |
|--------|-------|
| a) Yes | b) No |
|--------|-------|

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Language Level: B1
Type of activity: individual and pairs
Suggested time: 30 minutes



Grammar points

1. Preposition Hunt

Preposition: a word or group of words that is used before a noun or pronoun to show place, direction, time etc.

Circle the 10 prepositions in this box. Score 4 points for each correct answer. Who will score the highest? Perhaps you will. Good luck!

maths	through	at	angle	compass
arc	measure	up	along	construct
of	equal	on	middle	move
out	for	diameter	point	metre
image	outline	in	draw	to

2. **Missing Prepositions.** The following are six sentences from your maths textbook. Some of the prepositions are missing. Decide which ones.

- Calculate the value ____ x and y.
- Give a reason ____ each answer.
- The two base angles are equal ____ p° .
- ____ the diagram o is the centre of the circle.
- p,q,r and x are four points ____ the circumference of a circle.
- The angle ____ a semi circle is always 90°

3. **Now it's your turn!** Go to your maths textbook and the unit on angles and constructions. Rewrite some of the sentences, leaving out the prepositions. Swap your sentences with another student, fill them in and correct them for one another.

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Alphaboxes

Using your textbook, find one word beginning with each of the letters of the alphabet. Write the word in the relevant box. You could also write the word in your 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

Do you understand all these words?



Get your teacher to check this, then file it in your folder so you can use it in the future.

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Word Search

Find the words in the box below.

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

ALTERNATE ANGLE ARC BISECTOR COMPASS CONSTRUCT	CONSTRUCTION DIAGRAM DIAMETER DRAW EQUAL EVALUATE	HYPOTENUSE ISOSCELES LINE MEASURE OPPOSITE PARALLELOGRAM	PERPENDICULAR POINT SEMICIRCLE STRAIGHT SWING TRIANGLE VERTICALLY
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Play Snap:

Make Snap cards with 2 sets of the same keywords. See *Notes for teachers* for ideas about how to use the cards.



semicircle	semicircle
construct	construct
draw	draw

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evaluate	evaluate
equal	equal
diagram	diagram

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compass	compass
Isosceles triangle	Isosceles triangle
cm (centimetre)	cm (centimetre)

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MATHS: Angles and constructions

line	line
point	point
bisector	bisector

Answer key

Working with words, page 6

2.c, b.

Picture Sentences, page 7

1. a, b

2. Calculate the area of the parallelogram.

Copy the angle below.

Show all construction lines clearly.

Odd one out, page 8

1. phone, cold, hungry, grey

Maths keywords, page 9

1. diameter (noun), alternate (adjective or verb), hypotenuse (noun), construct (verb)

Unscramble the letters, page 10

Centimetre, compass, measure, opposite

Secret Code: Draw an arc with a compass.

Completing sentences, page 11

1. straight line.
2. opposite angles
3. parallelogram
4. diagonals
5. bisect
6. area
7. centre
8. four
9. pencil
10. clearly

Multiple Choice, page 12

1. b, 2. d, 3. a, 4. b, 5. a

Grammar Points, page 13

1. Prepositions: through, at, up, along, of, on, out, for, in, to
2.
 - Calculate the value of x and y .
 - Give a reason for each answer.
 - The two base angles are equal to p° .
 - In the diagram o is the centre of the circle.
 - P, q, r and x are four points on the circumference of a circle.
 - The angle of a semi circle is always 90°

Word Search

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