Angles in Polygons (F)
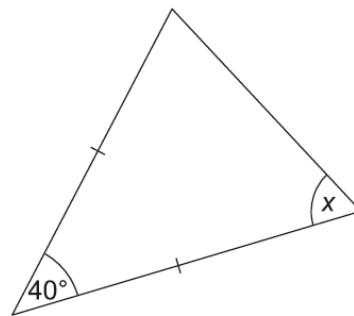
A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR, Pearson-Edexcel and WJEC Eduqas.

Name:	
Total Marks:	

1. The diagram shows a triangle.

Not to scale

Find the value of x.

Give a reason for each step of your working.

x = ... ° [3]

2. PQRS is a rectangle.

   A, B, C and D are points on SP, PQ, QR and RS respectively.

   AC is the line of symmetry for the diagram.
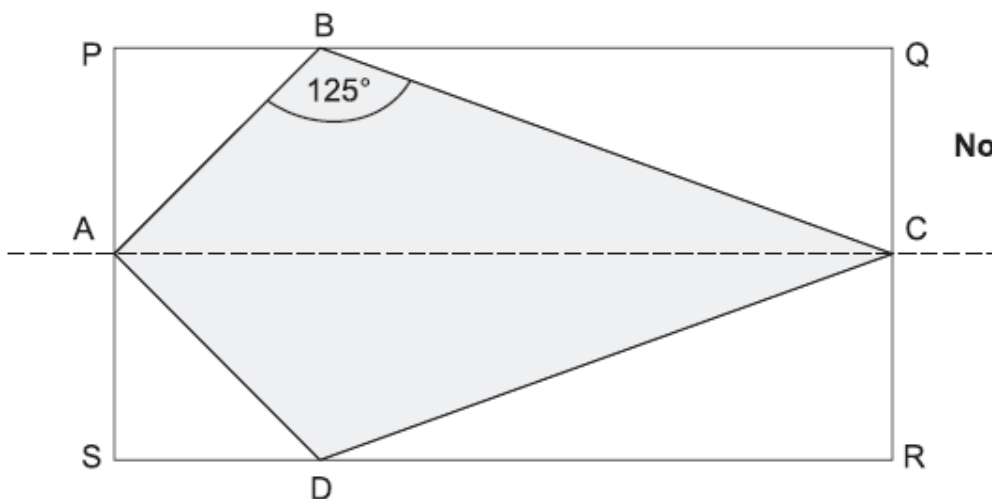
Not to scale

(a) Angle ABC = 125°.
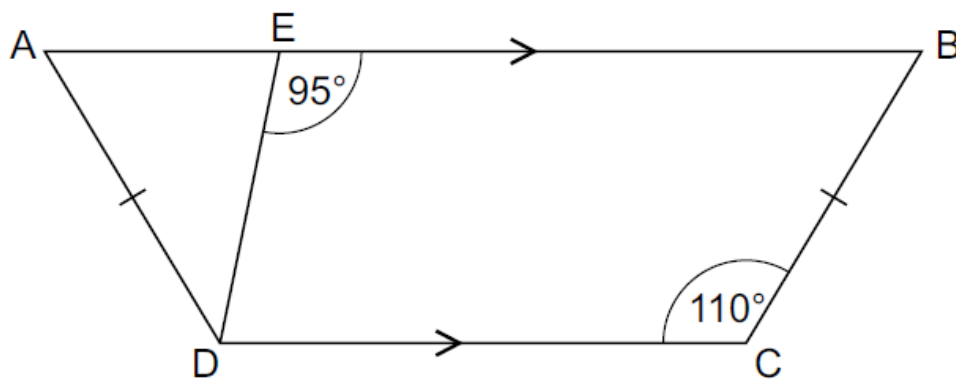
   Write down the size of angle ADC.

(a) Angle ADC = ... ° [1]

(b) AP is the same length as PB.

   Work out the size of angle BCD.

   Show your reasoning clearly.

(b) Angle BCD = ... ° [4]

3. ABCD is a trapezium.

Not to scale

Work out

  (a) angle EBC,

(a) .... ° [1]

  (b) angle ADE.

(b) .... ° [2]

4. The angles in a triangle are in the ratio 1 : 2 : 3.

   Neil says
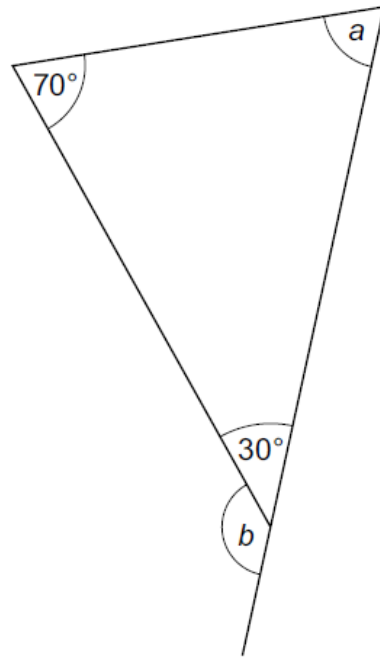
        This is a right-angled triangle.

   Is Neil correct?

   Show your reasoning.
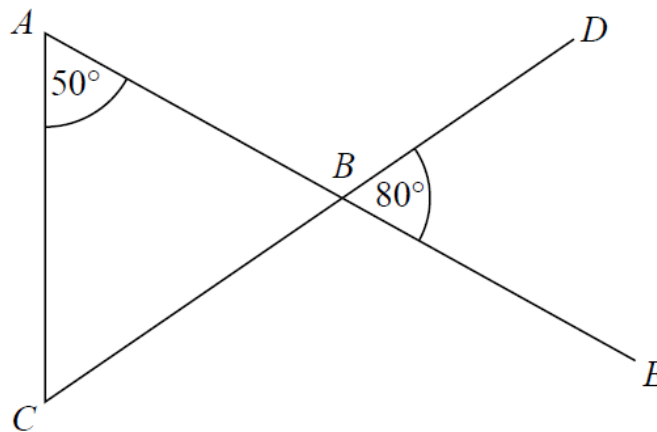
[3]

5. Here is a diagram.

Not to scale

70°

a

30°

b

(a) Work out angle a.

(a) a = ... ° [1]

(b) Work out angle b .

(b) b = ... ° [1]

6. ABE and CBD are straight lines.

A

50°
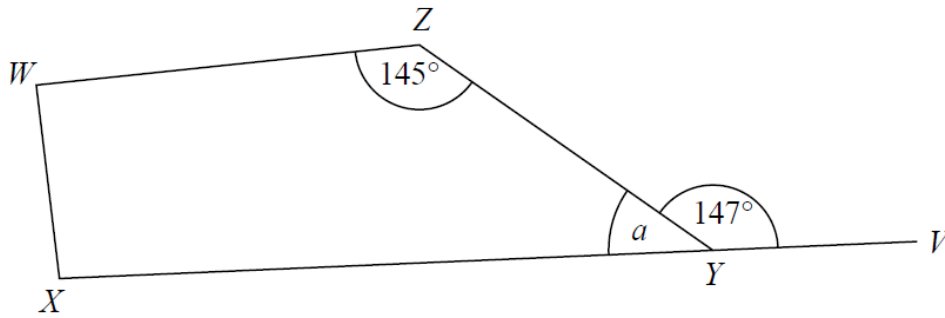
B

80°

D

E

C

Show that triangle ABC is an isosceles triangle.

Give a reason for each stage of your working.

[4]

7. WXYZ is a quadrilateral.

XYV is a straight line.

(a) (i) Find the size of the angle marked a.

.... °

(ii) Give a reason for your answer.

[2]

Angle ZWX = angle WXY
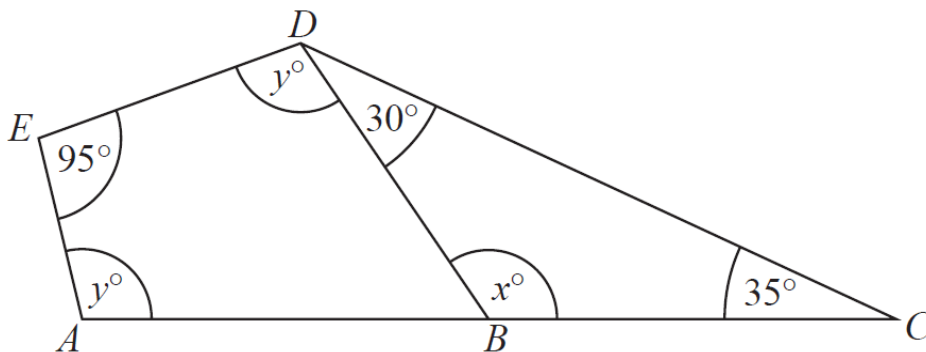
(b) Work out the size of angle ZWX.

.... ° [2]

8. ABC is a straight line.

BCD is a triangle.

ABDE is a quadrilateral.

(a) (i) Work out the value of x.

....
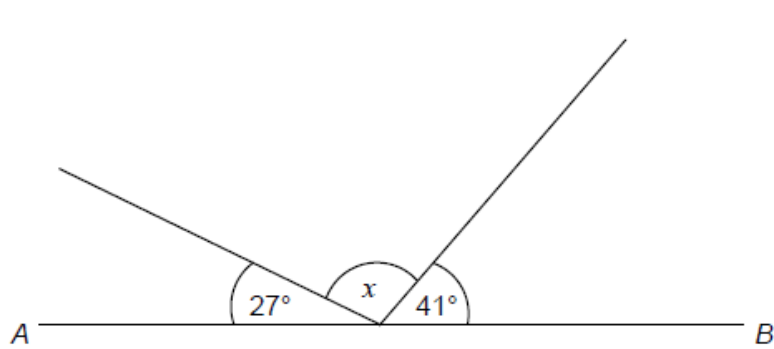
(ii) Give a reason for your answer.

[2]

(b) Work out the value of y.

.... [2]

9. AB is a straight line.

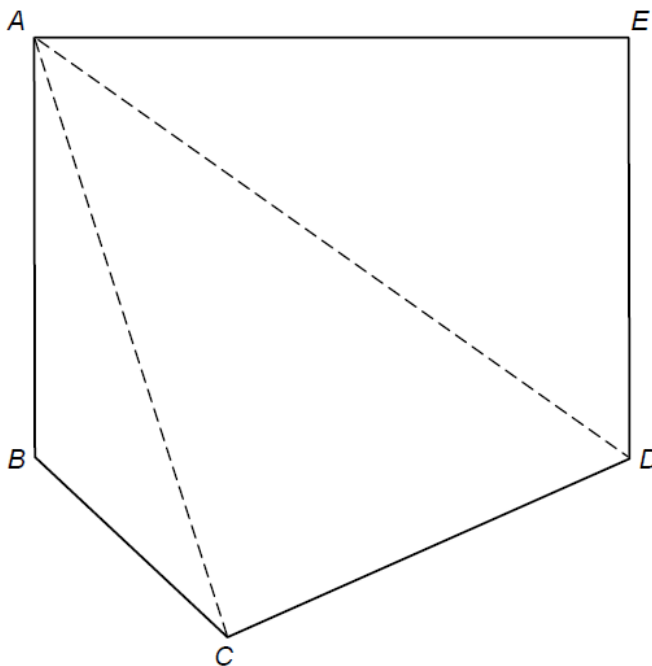Not drawn
accurately

27° x 41°

A _____ B

Work out the size of angle x.

[2]

10. Polygon ABCDE is divided into triangles as shown.
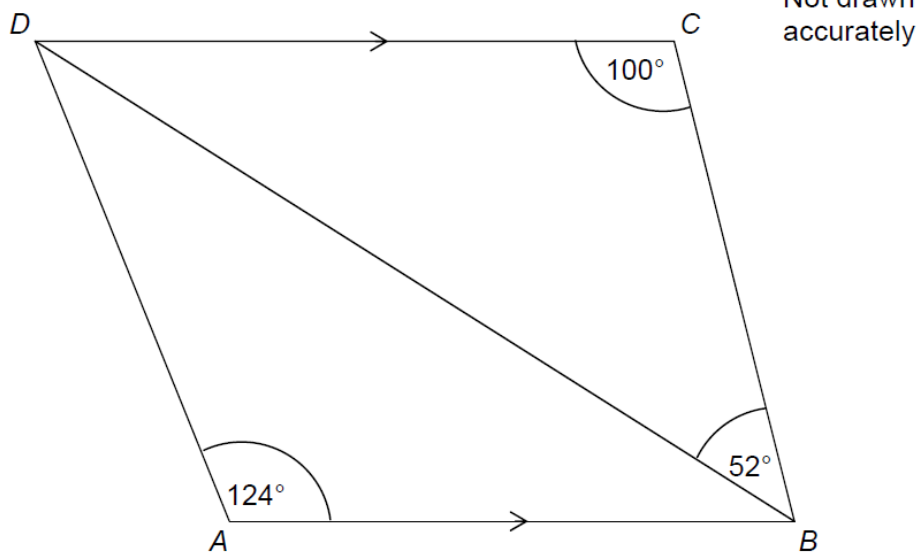
A   E

Not drawn
accurately

B   D

C

Use the triangles to work out the sum of the interior angles of polygon ABCDE.

You must show your working.

[2]

11. In the diagram, DC is parallel to AB.

    Show that triangle ABD is isosceles.

Not drawn
accurately

D → C

100°

124°
A →

52°
B

[3]

12. In the diagram below, ABD is a straight line.

$A\hat{C}B = 80°$ and $C\hat{B}D = 130°$.

C
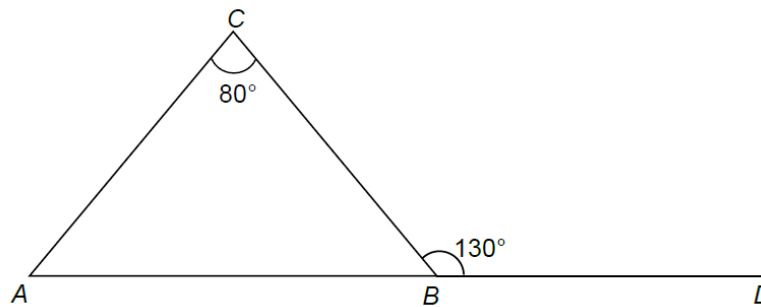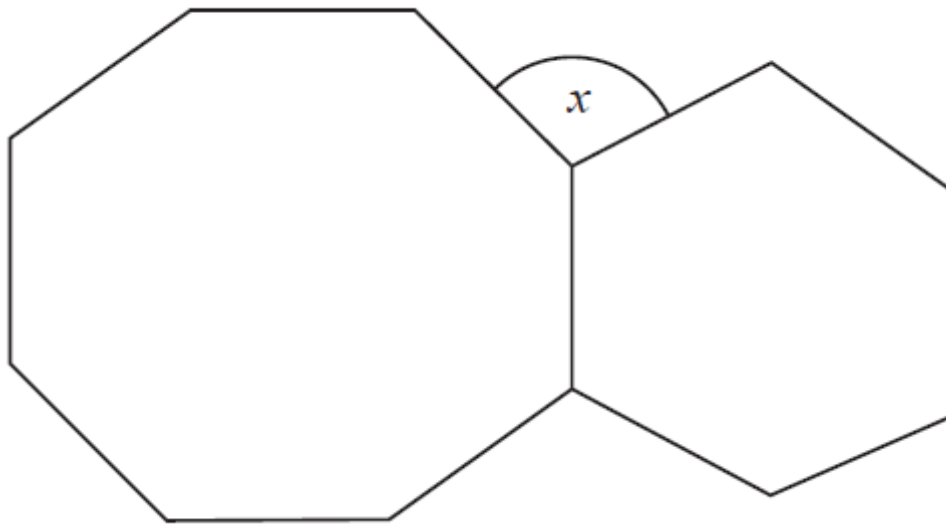
80°

130°

A   B   D

Diagram not drawn to scale

Show that triangle ABC is an isosceles triangle.

You must explain your reasoning.

[4]

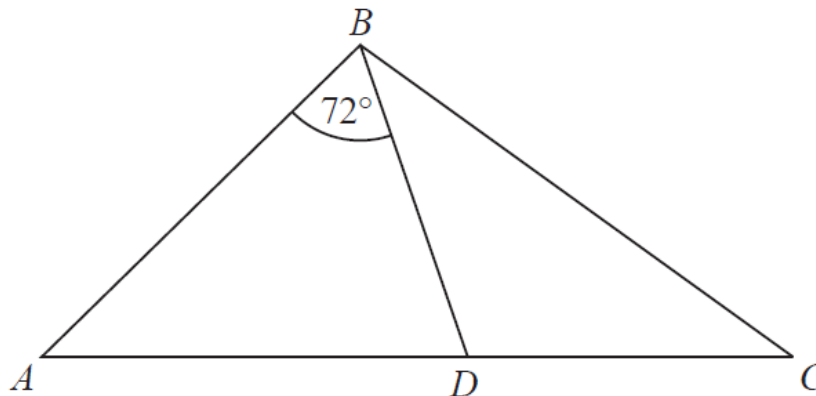13. The diagram shows a regular octagon and a regular hexagon.

Find the size of the angle marked x

You must show all your working.

[3]

14. ABC is an isosceles triangle with BA = BC.

D lies on AC.

ABD is an isosceles triangle with AB = AD.

Angle ABD = 72°

Show that the triangle BCD is isosceles.

You must give a reason for each stage of your working.

[5]

15. The diagram shows a right-angled triangle.
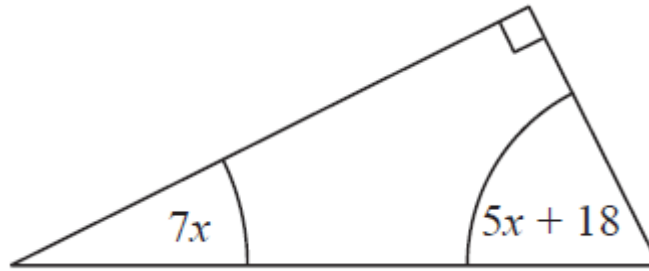
All the angles are in degrees.

Work out the size of the smallest angle of the triangle.

[3]

16. ABC is a right-angled triangle.

P is a point on *AB*.

Q is a point on *AC*.

AP = AQ.

Work out the size of angle *AQP*.

You must give a reason for each stage of your working.
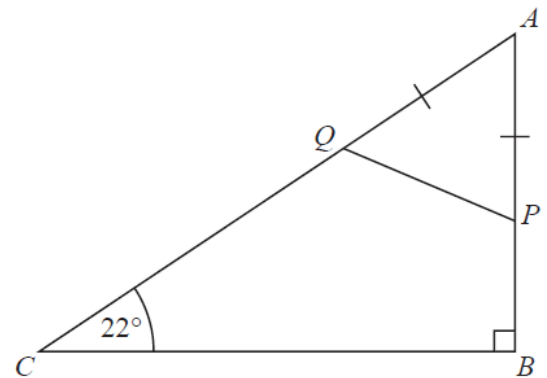
[4]

17. ABC is an isosceles triangle.

When angle A = 70°, there are 3 possible sizes of angle B.

(a) What are they?

.............................° , ... ° , ... °

[3]

When angle A = 120°, there is only one possible size of angle B.

(b) Explain why.

[1]

18. The diagram shows a triangle ACD and an equilateral triangle BCD.

Not drawn accurately
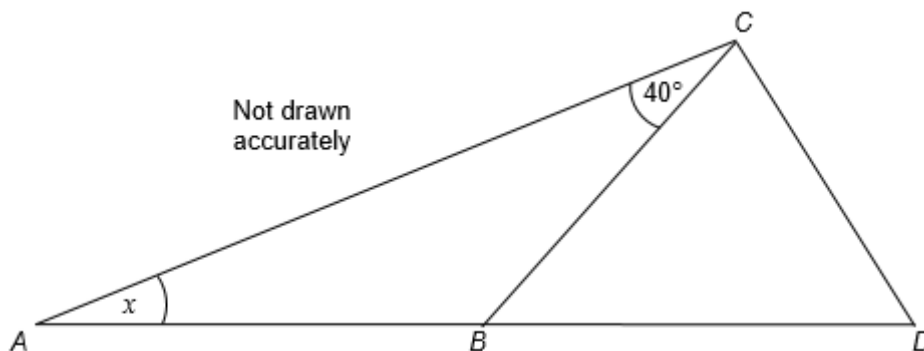
Work out the size of angle x.

[2]

19. The diagram shows a parallelogram *ABCD*.

B   P   C
130°
100°
y
35°   x   Not drawn accurately
A   D

P is a point on *BC*.

a) Work out the size of angle x.

You must show your working, which may be on the diagram.

[3]

b) Work out the size of angle y.

[1]

CREDITS AND NOTES

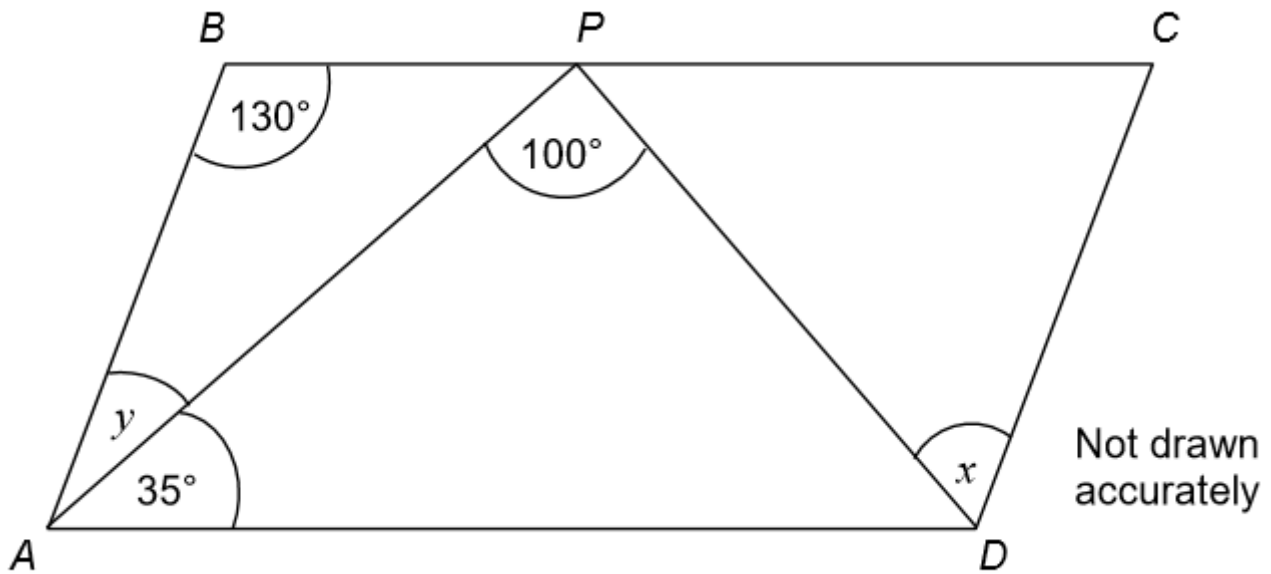| Q	Awarding Body	Q	Awarding Body	Q	Awarding Body
1	OCR	10	AQA	19	AQA
2	OCR	11	AQA		
3	OCR	12	WJEC Eduqas		
4	OCR	13	Pearson Edexcel		
5	OCR	14	Pearson Edexcel		
6	Pearson Edexcel	15	Pearson Edexcel		
7	Pearson Edexcel	16	Pearson Edexcel		
8	Pearson Edexcel	17	Pearson Edexcel		
9	AQA	18	AQA		

Notes:

These questions have been retyped from the original sample/specimen assessment materials and whilst every effort has been made to ensure there are no errors, any that do appear are mine and not the exam board s (similarly any errors I have corrected from the originals are also my corrections and not theirs!).

Please also note that the layout in terms of fonts, answer lines and space given to each question does not reflect the actual papers to save space.

These questions have been collated by me as the basis for a GCSE working party set up by the GLOW maths hub - if you want to get involved please get in touch. The objective is to provide support to fellow teachers and to give you a flavour of how different topics "could" be examined. They should not be used to form a decision as to which board to use. There is no guarantee that a topic will or won't appear in the "live" papers from a specific exam board or that examination of a topic will be as shown in these questions.

Links:

AQA http://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300

OCR http://ocr.org.uk/gcsemaths

Pearson Edexcel http://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html

WJEC Eduqas http://www.eduqas.co.uk/qualifications/mathematics/gcse/

Contents:

This version contains questions from:

AQA – Sample Assessment Material, Practice set 1 and Practice set 2

OCR – Sample Assessment Material and Practice set 1

Pearson Edexcel – Sample Assessment Material, Specimen set 1 and Specimen set 2

WJEC Eduqas – Sample Assessment Material