NGO & SONS PREPARATORY COLLEGE

Name: _____

Class: _____

Date: _____

NEWTON STREAM
YEAR 5 MATHEMATICS

TERM THREE	Week 1	Angles and Lines
	Week 2	2D Shapes + Transformation
	Week 3	3D Shapes
	Week 4	Area
	Week 5	Volume
	Week 6	Ratio and Rates
	Week 7	Inverse Relationships
	Week 8	Exam Revision
	Week 9	Exam + Number Patterns
	Week 10	Exam Solutions + Geometric Patterns

Neatness	/2	Comments
Completion/Attempt	/4	
Understanding	/4	
Total	/10	

Learning Outcomes

Angles and Lines

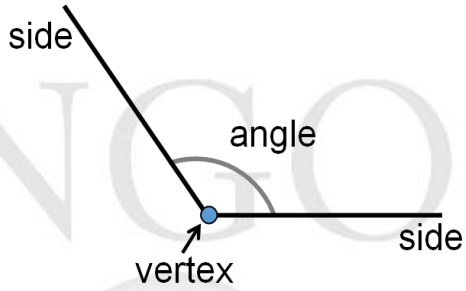
S2-P2-O1: Draw and classify angles as acute, obtuse, straight, reflex or a revolution.
S3-P1-O1: Recognise the need for formal units for angles and lines.

Class Notes:

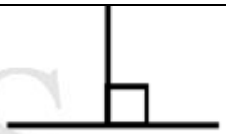
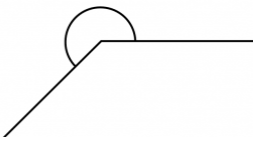
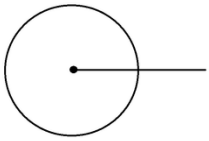
REVISION

Introduction to Angles

- Angles measure the space or turn between two lines which meet at a common point.
- The two lines which form the angle are called the sides (or arms) of the angle and the point at which they meet is called the vertex of the angle.
- They are often measured using a protractor and use degrees (°) as a unit.

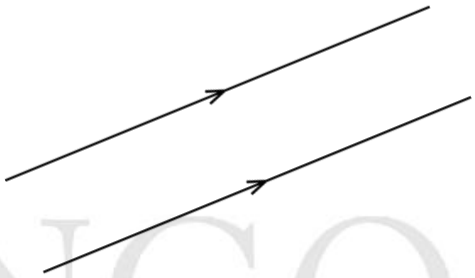


Types of Angles

ACUTE ANGLE	RIGHT ANGLE
	
Less than a right angle. Angle size between 0° & 90°.	The perfect L shaped angle. Angle size must equal to 90°.
OBTUSE ANGLE	**STRAIGHT ANGLE**
	
Larger than a right angle. Angle size between 90° & 180°.	Otherwise known as a straight line. Angle size must equal 180°.
REFLEX ANGLE	**REVOLUTION ANGLE**
	
Larger than a straight angle. Angle size between 180° and 360°.	Otherwise known as an angle at a point. Angle size must equal to 360°.

Parallel Lines

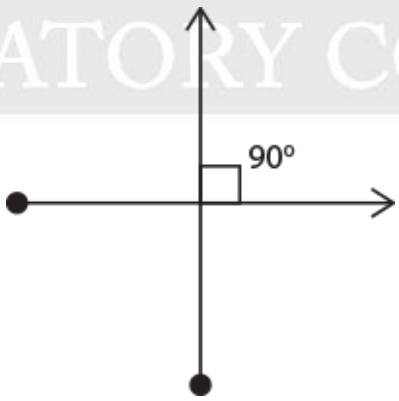
- Parallel lines are lines which never meet, even if we extend them.
- As they never meet, the distance between the lines remain constant.
- In mathematics, we can represent parallel lines by drawing a small arrow head on each line.



- Some examples of where we see parallel lines in real life:
  - Train tracks
  - Parking lines
  - Lines on a writing pad

Perpendicular Line

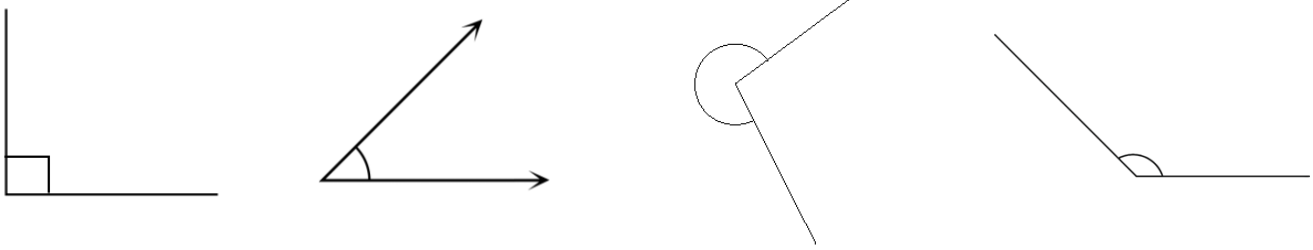
- Perpendicular lines are formed when two lines meet each other at right angles (at 90^{o}).
- The point in which they meet is called the point of intersection.
- In mathematics, we can represent parallel lines by drawing a small square at the point of intersection.



- Some examples of where we see perpendicular lines in real life:
  - Road Intersections
  - Window Frames
  - Edges of a book

1) Name the following angles (acute, obtuse, right, straight reflex or revolution angle).

a) b) c) d)



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2) Identify the type of angle based on the following values given.

a) 160^o b) 242^o

c) 75^o d) 180^o

e) 40^o f) 360^o

3) Identify whether the following lines are parallel, perpendicular or neither.

a) b) c) d)

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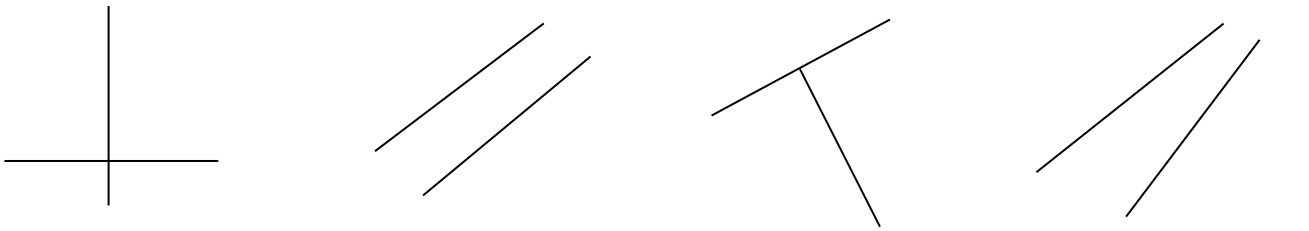

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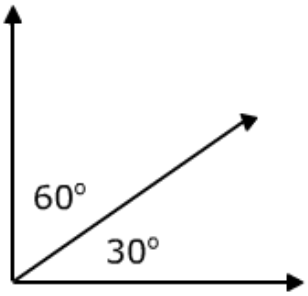
SECTION A

Complementary Angles

- Complementary angles are angles which add up to 90^o (a right angle).

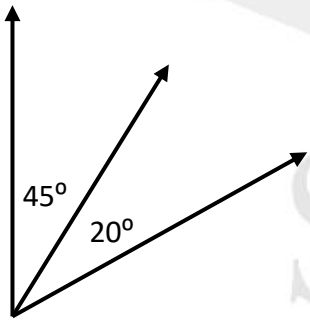
Example



60^o and 30^o add up to 90^o. This means they are complementary angles!

1) Identify whether or not the following angles are complementary angles.

a)



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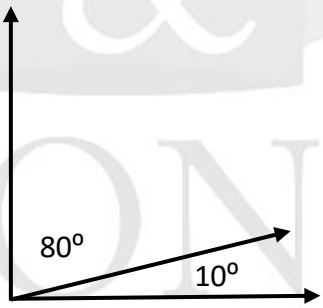
b)



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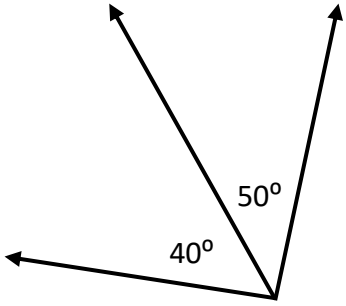
c)



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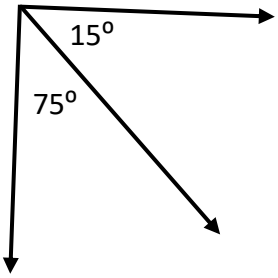
d)



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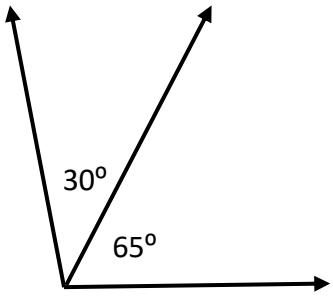
e)



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f)

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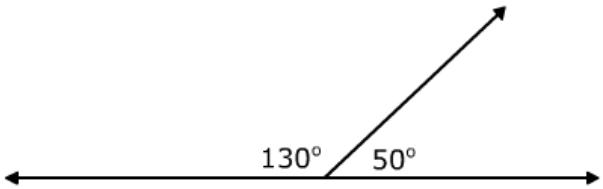
Supplementary Angles

- Supplementary angles are angles which add up to 180^o (a straight line).

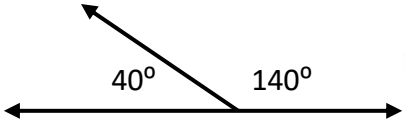
Example



130^o and 50^o add up to 180^o. This means they are supplementary angles!

1) Identify whether or not the following angles are supplementary angles.

a)



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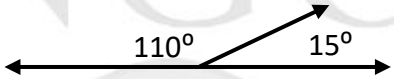

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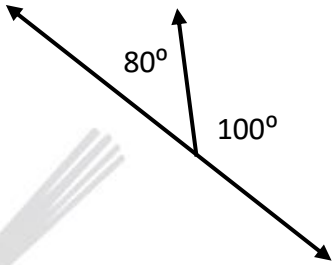

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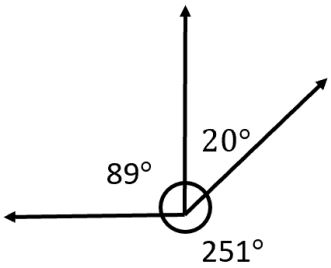
Angles at a point

- Angles at a point add up to 360^o (a revolution angle).

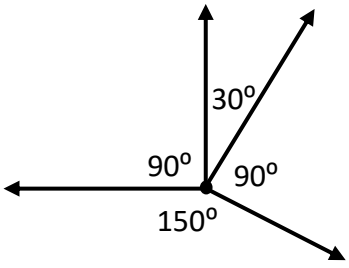
Example



20^o, 251^o and 89^o add up to 360^o. This means they are angles at a point!

1) Identify whether or not the following angles are at a point.

a)



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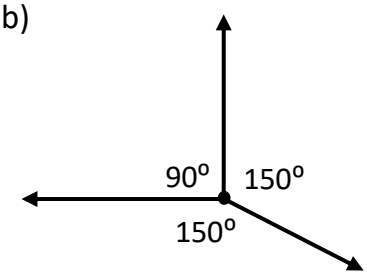
b)



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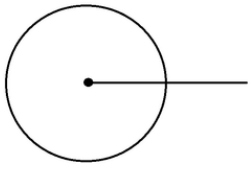
c)



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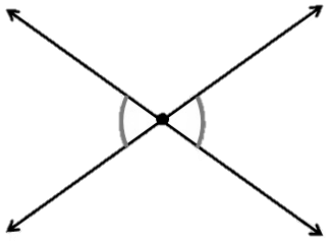
Vertically Opposite Angles

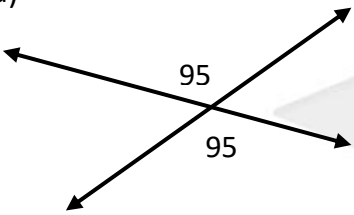
- Vertically opposite angles are the angles formed opposite to each other when two straight lines intersect (meet). These angles are always equal.



The two angles indicated above are equal as they are <u>vertically opposite</u>!

1) Identify whether or not the following angles are vertically opposite.

a)



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b)

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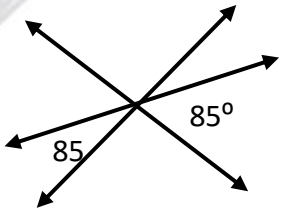
c)



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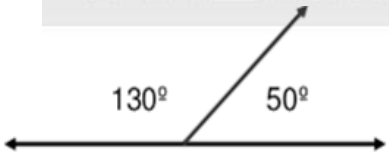
Mixed Angle Properties

1) Identify if the following angles are complementary, supplementary, at a point, vertically opposite or none.

a)



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b)

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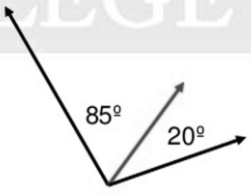
c)



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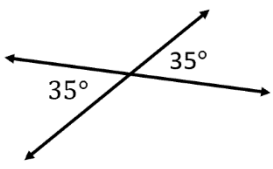
d)



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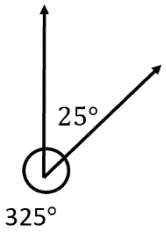
e)



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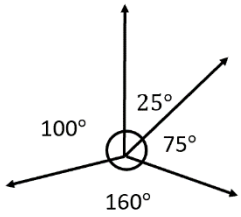
f)



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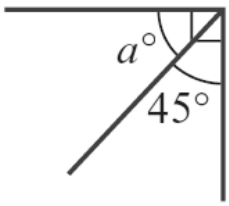
Finding the Unknown Angle

1) Find the following angles. Identify the angle property used to find the angle.

a)



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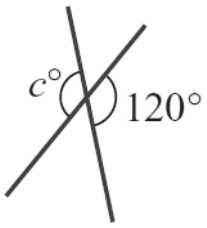
b)



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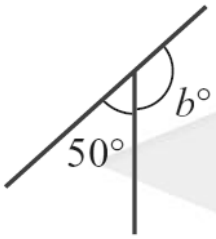
c)



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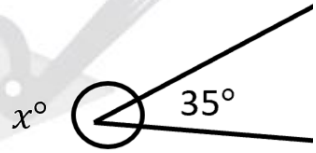
d)



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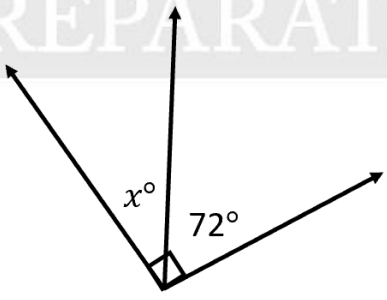
e)



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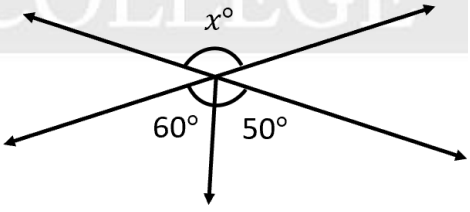
f)



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SECTION B

Revision: Angles and Lines

1) Name the following angles (acute angle, obtuse angle, right angle, straight angle, reflex angle or revolution angle).

a) 

_____

b) 

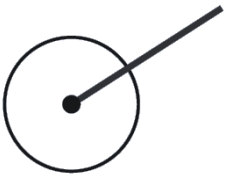
_____

c) 

_____

d) 

_____

e) 

_____

f) 

_____

g) 

_____

h) 

_____

2) Identify the type of angle based on the following values given.

a) 21^o

b) 45^o

c) 175^o

d) 90^o

3) Identify the type of angle based on the following clues given.

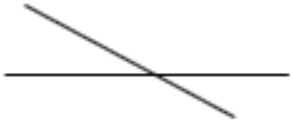
a) I am smaller than an obtuse angle but larger than an acute angle. What am I?

b) I have more than 180^o but less than 360^o. What am I?

4) Identify whether the following diagrams contain parallel lines, perpendicular lines, or neither.

a) 

_____

b) 

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c) 

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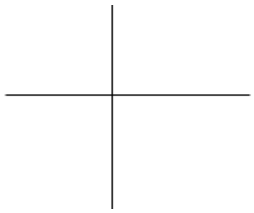
d) 

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e) 

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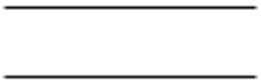
f) 

_____

g) 

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h) 

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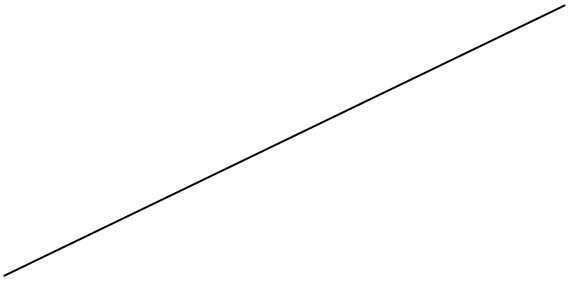
5) Draw in the notation for parallel and perpendicular lines for the following letters.

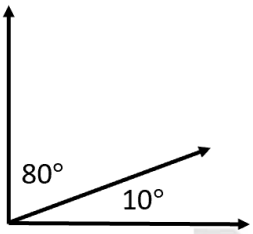
6) Using a ruler, draw a line that is parallel and a line that is perpendicular to the one below, labelling your two results.



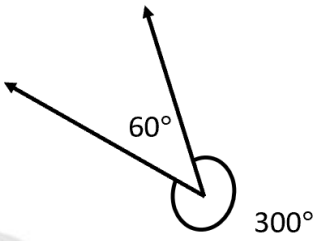
Angle Properties

1) Identify if the following angles are complementary, supplementary, at a point, vertically opposite or none.

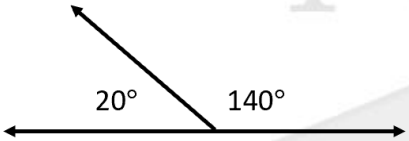
a)



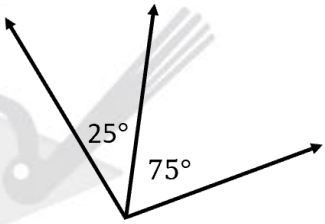
b)



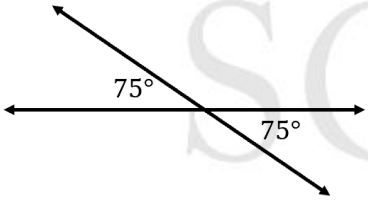
c)



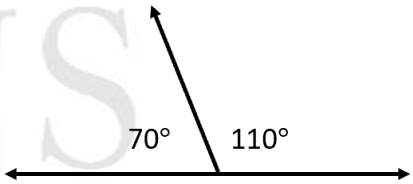
d)



e)

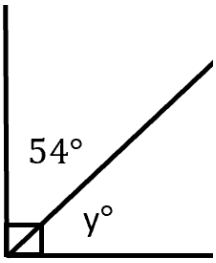


f)



2) Find the following angles. Identify the angle property used to find the angle.

a)



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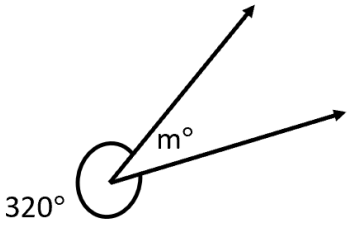

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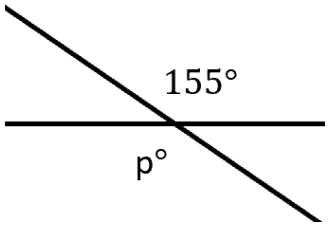
c)



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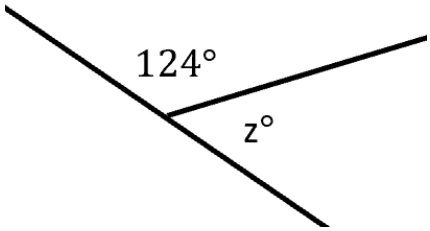
d)



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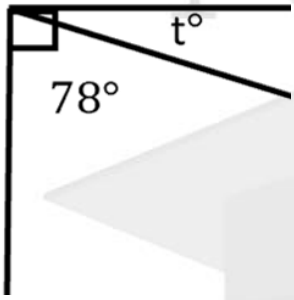
e)



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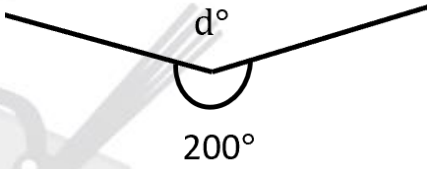

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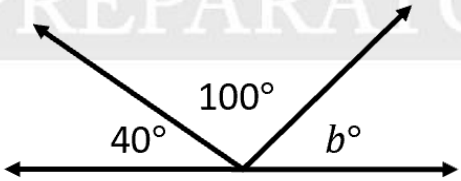

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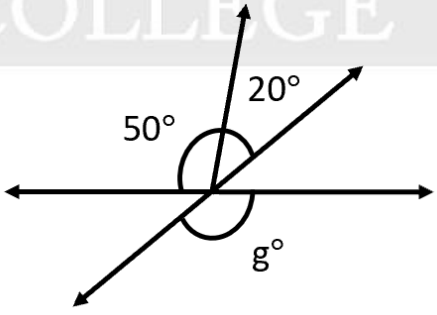
h)



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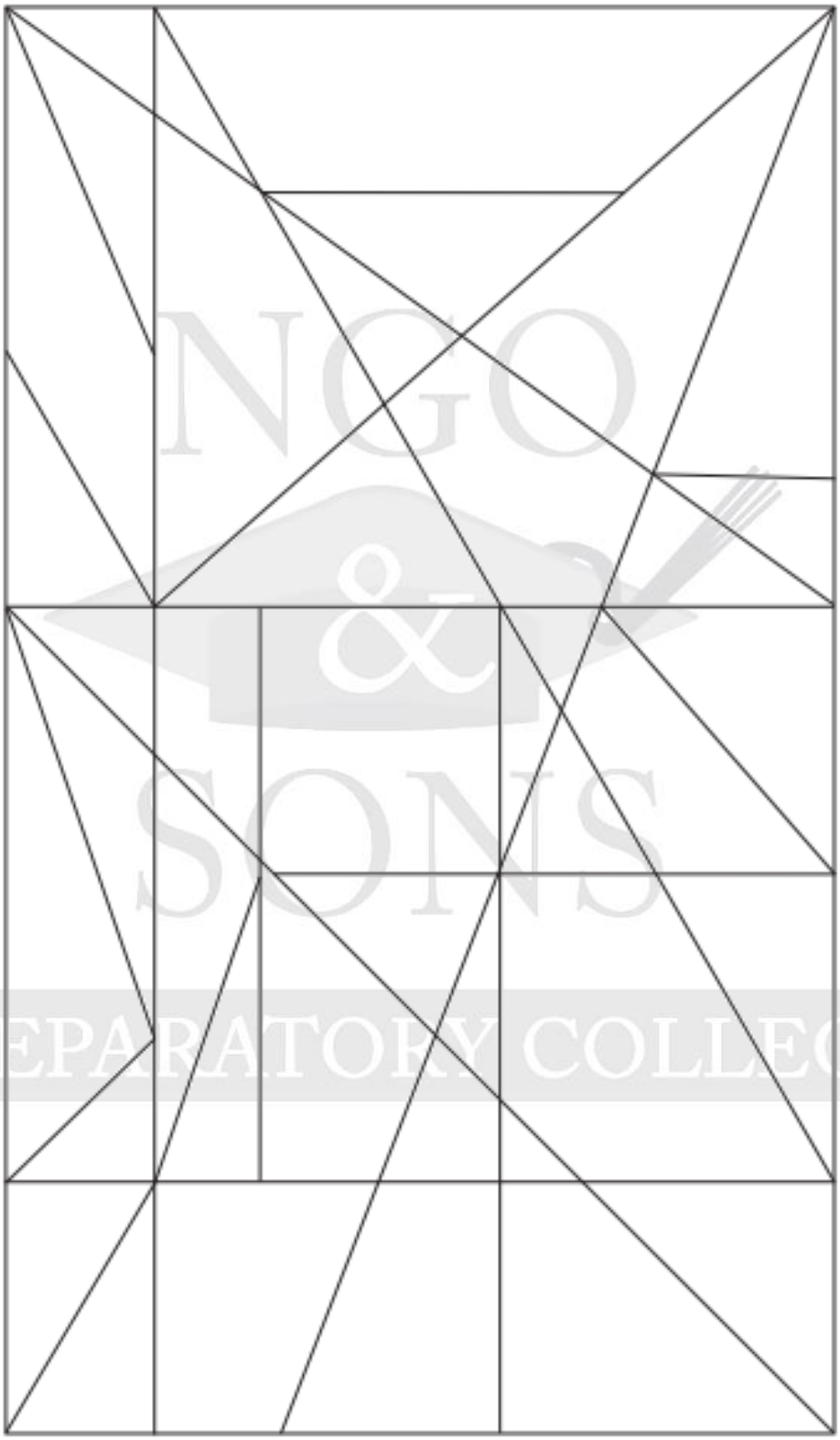
SECTION C

Below is a sketch. Mark the right angles in blue, obtuse angles in red and acute angles in green.



MATHEMATICAL REASONING

Students are to attempt these Mathematical Reasoning Questions. Due to the questions' level of difficulty, this section will not count towards students' overall homework marks. Students should not be discouraged if they are unable to answer these questions. Some of these questions will be reviewed in class.

1) Anne is given the following statement:

$$ab^2 - a^2b$$

If she notes down that a = 7 and b = 9, which of the following best describes the value of the above statement?

(a) This number is an odd number.
(b) This number is a multiple of 10.
(c) This number is greater than 100.
(d) None of the above.

2) John has a large block of sand that is cube-shaped. It has a straight edge of 18 cm. John wants to cut this block into cubes which have a volume of 27 cm^3. How many cubes will he have?

(a) 200 (b) 240 (c) 216 (d) 220

3) So far, Lisa has written 20% of a book. The book now has 120 pages. If she decides to increase the total amount of pages in the book by another 20%, the final amount of pages the book will have will be:

(a) 360 (b) 720 (c) 20 (d) 1

4) In an hour, 1.08 L of water will have left a tap. Jean wants to fill a rectangular with measurements of 12cm by 9cm by 5cm. What is the minimum time it takes to fill the tap?

(a) 50 min (b) 20 min (c) 30 min (d) 60 min

5) What number is missing from the sequence below:

2, 14, 5, 12, ?, 10, 11, 8, 14, 6, 17

(a) 15 (b) 7 (c) 10 (d) 8

6) A motorcycle covers 40 km with a speed of 20 km/hr. For the next 40 km of the journey he increases his average speed to 30 km/hr. His average speed for the next part of the journey can best be described as:

(a) Faster than his original speed by 40 km/hr
(b) Faster than his original speed by 32.5 km/hr
(c) Triple his original speed.
(d) Faster than triple his original speed by 0.5 km/hr

7) A large cube is formed from the material obtained by melting three smaller cubes of 3,4 and 5 cm sides. What is the ratio of the total surface areas of the smaller cubes compared to the larger cube?

(a) 5:4 (b) 2:1 (c) 2:1 (d) 12:7

8) 3/5 of 75 is the same as ¾ of a certain number. It is true to say that,

(a) The number is a multiple of 20 and 16.
(b) The number is an even number not divisible by 3.
(c) The number is an odd number divisible by 3.
(d) The number is an even number that is a multiple of 9.

9) Katherine buys a large handkerchief for $3.50. She cuts it into 2 equal pieces. How much would she have to sell each piece in order to make a total profit of $4.50?

(a) $2.25 (b) $12.50 (c) $6 (d) $4

10) Matthew recently bought a patch of land for his cows. However, recently, the area of the land was increased by half of its original amount and its length quadrupled.

Which of the following statements about his land is true?

i. Fencing for the new area of land will be the same.
ii. Fencing for the new area of land would increase.
iii. The width will be halved.
iv. The width will double.

Which of the above statements would be correct?

(a) (i) and (iii) (b) (ii) and (iii) (c) (ii) and (iv) (d) All are correct