



Name: \_\_\_\_\_ Date: \_\_\_\_\_ Section: \_\_\_\_\_

**TOPIC: REAL NUMBERS**

Evaluate the following:

- a)  $(-5)^2 \times (-3)^3 \times 3 \times (-1)$
- b)  $[(-3) + 9 - 4] \div 7$
- c)  $(-2) \times (-5) + (-20) \div (-10)$
- d)  $2\frac{5}{9} - 3\frac{1}{4}$
- e)  $10 \times \{[(-20) \div (-2) + 10]^2 \div (-8) - (20 \div 2)^2 \div (-2)\} \times 100$
- f)  $[-6 - (-16)] + (-15)$
- g)  $-2\frac{3}{4} + (-1\frac{1}{2}) - (-1\frac{2}{3})$

**Topic: Approximation and Estimation**

Q) Round each of the following numbers to the nearest 100

- a) 108
- b) 199
- c) 3471
- d) 59
- e) 333
- f) 4512

Q) Round the number 4765173 to:

- a) The nearest million
- b) The nearest 10
- c) The nearest 1000
- d) The nearest 100

Q) Write each of the following numbers correct to 3 significant figures:

- a) 374120
- b) 84563
- c) 261.42
- d) 0.3648
- e) 0.002615
- f) 0.0025713
- g) 3.6213
- h) 4.0071



Q) Write each of the following numbers correct to 2 decimal places:

- a) 7.431
- b) 8.269
- c) 4.7135
- d) 11.925
- e) 24.8603
- f) 44.0019

Q) Write each of the following numbers correct to the number of significant figures and decimal places stated:

- a) 6.475 to 2 s.f
- b) 3681 to 2 s.f
- c) 16001 to 3 s.f
- d) 16.999 to 2 d.p
- e) 160.37 to 1 d.p
- f) 14.7356 to 3 d.p
- g) 571.23 to 4 s.f
- h) 148.25 to 3 s.f
- i) 3.0008925 to 5 s.f

Q) Calculate and correct to 2 significant figures:

- a)  $33 \div 4$
- b)  $22 \div 0.7$
- c)  $142 \div 0.8$
- d)  $66 \times 1.27$
- e)  $3.25 \times 1001$

Q) Estimate each of the following:

- a)  $11.25 \times 76.3$
- b)  $12.021 \div 5.917$
- c)  $12.84 \times 3.94 \times 4.02$

**Topic: Linear Equations and simple Inequalities**

Q) Solve the following equations:

- 1)  $17 + 3x = -3$
- 2)  $7x - 14 = 18 - 4x$
- 3)  $\frac{2}{5}x - 1 = 4$
- 4)  $\frac{3x-4}{5} - 7 = 0$
- 5)  $\frac{2x-1}{3} = 1 - x$
- 6)  $5(2x + 3) = 35$
- 7)  $2x - [3 + (x - 5)] = 6$



Q) Find the unknown value in each case:

- 1) If  $xy - 3y^2 = 15$ , find  $x$  when  $y = 2$
- 2) If  $3u - 4uv = 5v^2$ , find  $u$  when  $v = 4$
- 3) If  $p - 5q = 4qr$ , find  $p$  when  $q = 4$  and  $r = -1$
- 4) If  $x - y = \frac{xy}{p-q}$ , find  $x$  when  $y = 2$ ,  $p = 5$  and  $q = 6$

Q) A number exceeds another by 4 and their sum is 32. Find the two numbers.

Q) When the number is doubled and 5 is subtracted from the result, the answer is 37. What is the number.

Q) The sum of two numbers is 120. If the larger number is four times the smaller number, what are the two numbers?

Q) The sum of three consecutive odd numbers is 333. Find the three numbers.

Q) Find two consecutive odd numbers such that when the smaller number is subtracted from three times the bigger number, the result is 56.

Q) Ahmed is twice as old as bobby. John is 7 years younger than Ahmed. If the sum of their ages is 38, how old are the three boys?

Q) A man was 26 years old when his son was born. Now, he is three times as old as his son. How old is his son now?

Q) Ben is three times as old as Carl now. In two years time, Ben will be twice as old as Carl. How old is Carl now?

Q) Zoe is 50 years old. His son Michang is 24 years old. How many years ago was Zoe three times as old as Michang?

Q) Adam is five times as old as Charles. In 8 years time, the sum of their ages will be equal to twice Adam's present age. Find their present ages.

Q) A, B and C shared \$1540. A received three times as much money as B and C's share is half that of A's. How much money did C receive?

Q) The length of a rectangle is 7cm longer than its width. If the perimeter of the rectangle is 74cm, find the length and area of the rectangle.

Q) A hawker bought  $x$  kg of beef at \$8.50 per kg and  $(2x + 5)$  kg of chicken at \$3.60 per kg. If the total cost was \$206.40, find the value of  $x$ .

Q16. For every 20 pupils going on a local school excursion, a teacher is needed to accompany them. How many teachers are needed to accompany a group of 154 pupils?



Q) A mini bus can ferry a maximum of 28 pupils. How many mini buses will be needed to ferry a group of 184 pupils?

Q) To photocopy Mathematics and Science worksheets for a class of 38, the treasurer of the class has to pay \$43.20, how much must the treasurer collect from each pupil correct to the nearest ten cents?

Q) The school's pocket money fund for the needy collected a total of \$4385. If this amount is to be given to a total of 32 needy pupils, how much can each needy pupil get, correct to the nearest \$5?

Q) Select the correct option for the following inequalities:

1)  $6e + 3 < 30$

A. 7

B. 6

C. 4

D. 2

2)  $8 \times e > 71$

A. 10

B. 3

C. 8

D. 4

3)  $107 \div e > 53$

A. 5

B. 8

C. 10

D. 1

**TOPIC: FUNCTIONS AND LINEAR GRAPHS**

Q) Complete the table of values of  $y = 2x + 4$  and draw a graph.

X	-1	0	1	2	3
Y					

Q) Complete the table for  $y = 3x + 1$  and draw a graph. Also find the slope by rise and run.

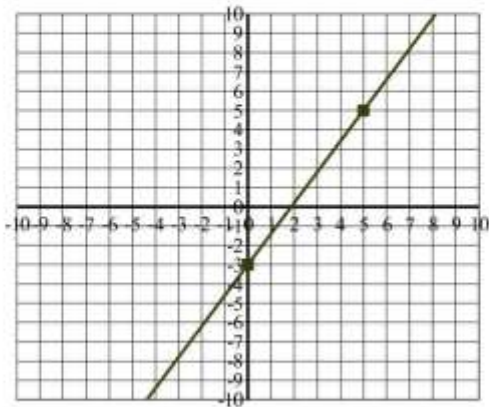
x	-1	0	1	2
y				

Q) Plot the graph of the line  $\frac{1}{2}x + 5$ , taking the values of x from -2 to 2. Show the slope by rise and run.

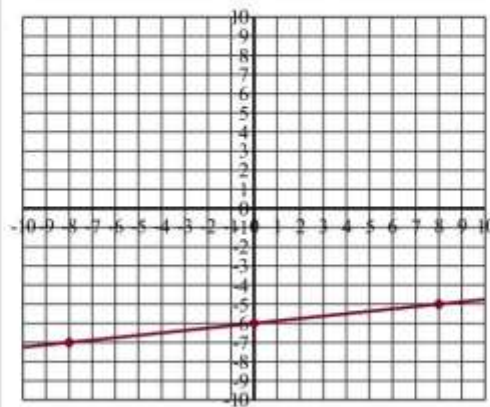


## Linear Equation Graphs (A)

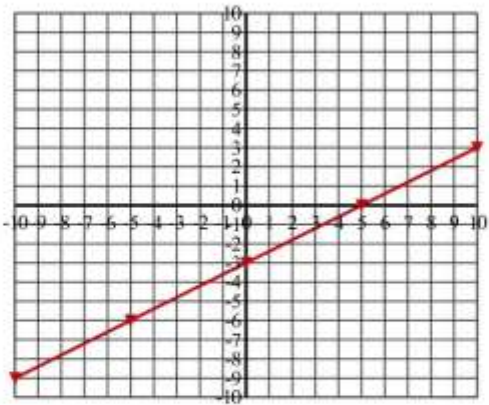
Find the slope, y-intercept for each line.



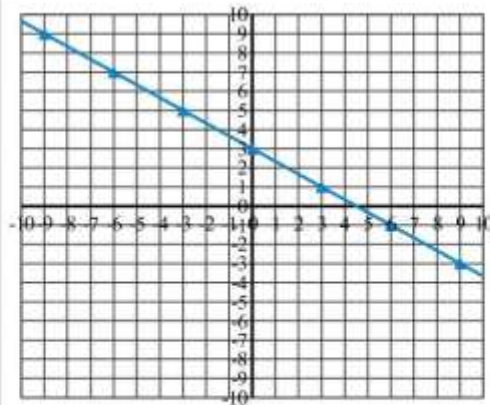
slope:  
y-intercept:



slope:  
y-intercept:



slope:  
y-intercept:



slope:  
y-intercept:

### TOPIC: PERCENTAGE

Q) Write each percentage as a fraction in its simplest form.

- 1) 210%                      2) 4.8%                      3) 18%                      4) 0.25%                      5)  $1\frac{1}{3}$  %

Q) Express the following as decimals

- 1) 99%                      2) 300%                      3)  $2\frac{4}{5}$  %                      4) 0.68%                      5) 1.002%



Q) Convert the following into percentages.

- 1) 0.07      2) 0.14      3) 0.058      4)  $\frac{19}{20}$       5)  $\frac{12}{15}$

Q) Find the value of the following

- 1) 7.5% of \$2500      2) 45% of 4kg      3)  $33\frac{1}{3}$  of 48 m

Q) Find the percentage increase of the following

- 1) \$60 by 10%      2) 32 g by  $12\frac{1}{2}$ %      3) 50 m by 125%

Q) Find the percentage decrease in the following

- 1) \$ 88 by 5%      2) 124 litres by 25%      3) 225 m by 16%

Q) Find the value of "x" in each of the following

- 1) 12% of x is 48      2) 77.5% of x is 217      3)  $29\frac{1}{2}$ % of x is 295

Q) In a box of 180 oranges, 15% were spoilt. How many oranges were in good condition?

Q) The price of notebook increases from 60 cents to 75 cents. Find the percentage increase in price.

Q) In a constituency, there are 12000 eligible voters. In a particular election, the following results were obtained.

Candidate	Percentage of voters
A	7%
B	39%
C	42%

Find the actual number of voters for each candidate given that 12% of them didn't vote.

Q) A television set is sold for \$1998 and a 11% profit is made. Find the original cost of the television set.

Q) James earned \$36000 in the year 1990. If he pays a 15% federal tax, an 8% state tax and a 3% city tax, how much money is left for James after the deductions are made?

**TOPIC: STATISTICAL DATA HANDLING**



Q: In a zoological garden there are 1000 creatures as per the following table given below:

Beast Animals	Other Land Animals	Birds	Water Animals	Reptiles
150	400	225	175	50

Represent the above data by a pie chart.

**Pie Graph - Camping Supplies**

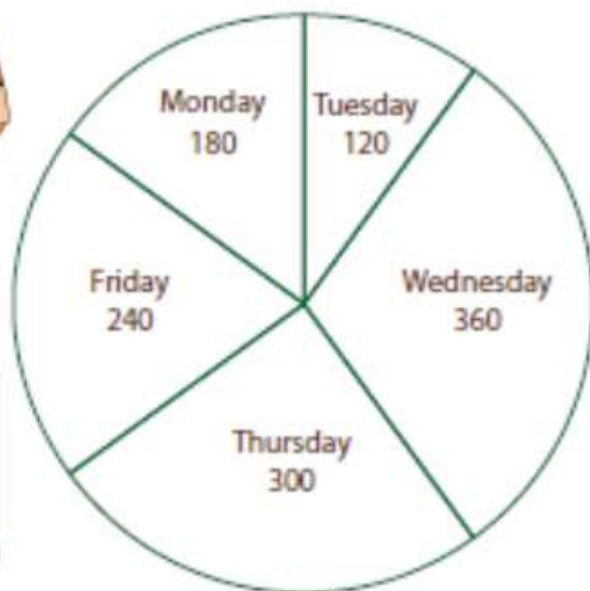
Richard's Camping Store is the best for camping gear supplies. They made a pie graph on the sales of certain items during the month of July. Use the graph to answer the questions.

Item	Percentage
Torch	50%
Bag	25%
Binocular	15%
Tent	10%

- 1) Which item sold the most in Richard's camping store? \_\_\_\_\_
- 2) What is the percentage of torches sold? \_\_\_\_\_
- 3) Did the store sell fewer bags or torches? \_\_\_\_\_
- 4) Is the sales % of bags more than the sales % of tents? \_\_\_\_\_
- 5) What is the percentage of bags sold? \_\_\_\_\_

## Pie Graph - Icecream Sales

John, an ice cream seller sells ice cream during weekdays. The pie graph display the number of ice cream sold. Study the pie graph and answer the questions.



1. What is the percentage of ice cream sold on Thursday? \_\_\_\_\_
2. What are the two days that equal the sales on Wednesday? \_\_\_\_\_
3. When did John sell most of the ice cream in his stand? \_\_\_\_\_
4. On which day 300 ice creams were sold? \_\_\_\_\_
5. What is the difference in percentage of ice cream sold between Wednesday and Friday? \_\_\_\_\_

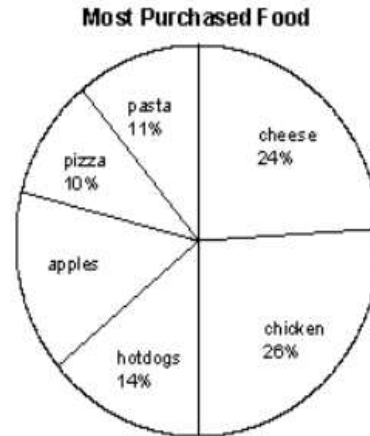


## Reading Pie Graphs



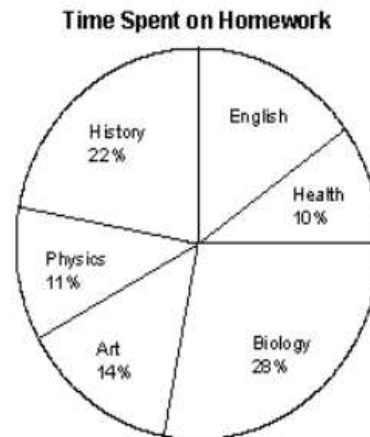
**A local grocery tracked which food stuffs customers purchased. Answer the questions based on the pie graph below.**

- 1) Were chicken and pasta chosen more than hotdogs and pizza; or were they equally bought? \_\_\_\_\_
- 2) Combined, which two foods did the greatest number of customers buy? \_\_\_\_\_
- 3) Between chicken and pasta which food was more popular; or were they equally popular? \_\_\_\_\_
- 4) If there were 200 customers that were tracked, how many bought pizza? \_\_\_\_\_
- 5) What percent of customers bought either apples or cheese? \_\_\_\_\_



**Chris tracked the time he spent on homework per topic during one week. Answer the questions based on the pie graph below.**

- 1) Between History and Physics which topic took longer; or did they require equal time? \_\_\_\_\_
- 2) What percentage of time did Chris spend on the English and Health homework? \_\_\_\_\_
- 3) Was the History and Physics work or the Biology and Art work longer; or were they equally time consuming? \_\_\_\_\_
- 4) If Chris spent 100 minutes on homework, how many minutes were spent on Art? \_\_\_\_\_
- 5) Combined, which two topics required the greatest amount of time? \_\_\_\_\_



### **TOPIC: AREA AND PERIMETER OF PLANE FIGURES**

Q) Find the area of each of the following:

- a) A parallelogram with base 6 cm and height 4.2 cm
- b) A parallelogram with base 4.6 m and height 2.5m
- c) A triangle with base 2.4 cm and height 20 cm
- d) A trapezium of height 14 mm and parallel sides 8 mm and 12 mm
- e) A trapezium of height 1.2 m and parallel sides 45 cm and 75 cm

Q) The length of a rectangle is seven times its width. If the perimeter is 120 cm, find its area.

Q) Complete the table for the circle:



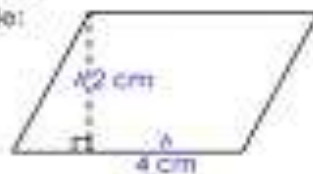
Radius	Diameter	Circumference	Area
14 cm			
	84 mm		
		220 m	
			2826 cm <sup>2</sup>
		78.5 cm	
	36 m		
4.2 mm			

## Area of a Parallelogram

The formula for finding the area of a parallelogram is **Area = base × height**.

This is written as **A = bh**.

Example:



$$A = bh$$

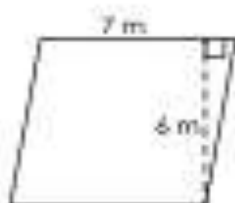
$$A = 4 \text{ cm}(2 \text{ cm})$$

$$A = 8 \text{ cm}^2$$

Find the areas of the parallelograms.



A = \_\_\_\_\_



A = \_\_\_\_\_



A = \_\_\_\_\_



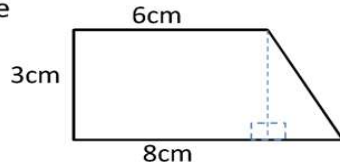
A = \_\_\_\_\_

# TRAPEZOID AREA SHEET 1

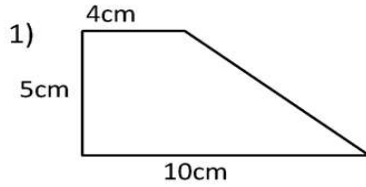


Find the area of these trapezoids by splitting them up into rectangles and triangles. They are not drawn to scale.

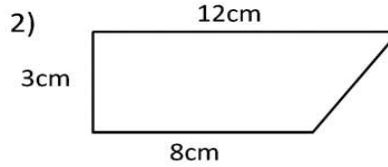
Example



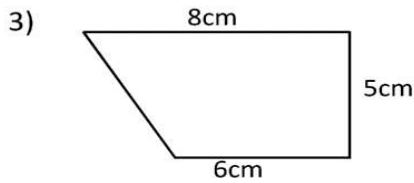
Area = area of rectangle + area of triangle  
 Area =  $6 \times 3 + \frac{1}{2} \times 2 \times 3 = 18 + 3 = 21\text{cm}^2$



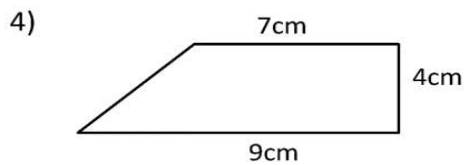
Area = \_\_\_\_\_  $\text{cm}^2$



Area = \_\_\_\_\_  $\text{cm}^2$



Area = \_\_\_\_\_  $\text{cm}^2$

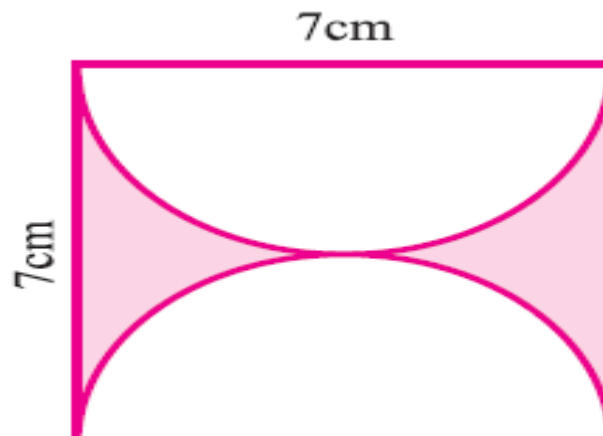
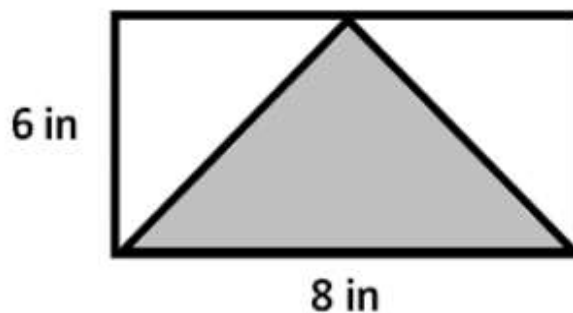


Area = \_\_\_\_\_  $\text{cm}^2$

*Handy hint:*

*The formula for the area of a trapezoid is*  
 $\frac{1}{2} \times (\text{length1} + \text{length2}) \times \text{height}$

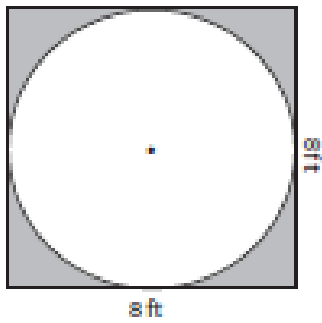
Q) Find the area of the shaded region:



## Area - Compound Shapes

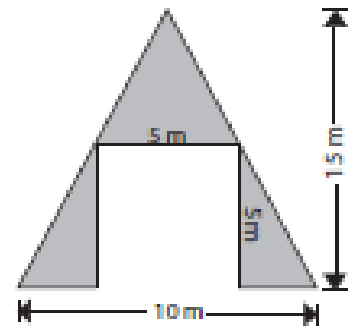
Find the area of shaded region. Round the answer to 2 decimal places if necessary.

1)



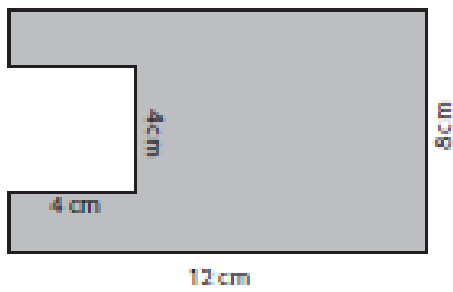
Area = \_\_\_\_\_

2)



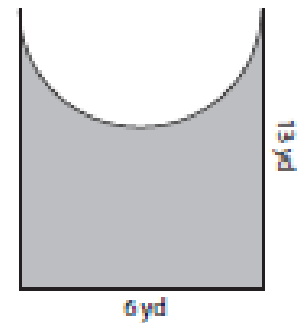
Area = \_\_\_\_\_

3)



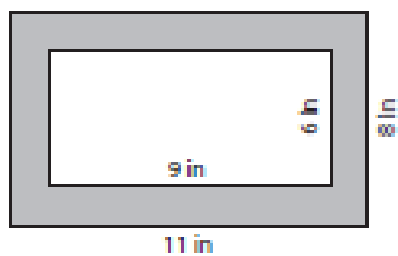
Area = \_\_\_\_\_

4)



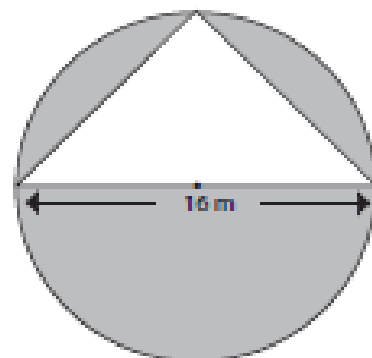
Area = \_\_\_\_\_

5)



Area = \_\_\_\_\_

6)



Area = \_\_\_\_\_





Q) My car travels 128 km on 12 litres of petrol. How far do I expect to travel on a full tank of 30 litres?

Q) A motorist plans to travel 1273 km. If petrol costs \$1.18 per litre and his car travels 19 km on 1 litre of petrol, how much will he need to spend on petrol for the trip?

**TOPIC: NUMBER SEQUENCE**

Q) Write down the next three terms in the following sequence:

- a) 1, 8, 27, 64, .....
- b) 11, 13, 16, 20, .....
- c) 47, 38, 30, .....
- d) 2, 3, 5, 8, 12, .....

Q) consider the pattern:

$$1 = 1^2$$

$$1 + 3 = 2^2$$

$$1 + 3 + 5 = 3^2$$

$$1 + 3 + 5 + 7 = 4^2$$

$$1 + 3 + 5 + \dots + (2k - 1) = 144$$

- a) Write down the eighth line in the pattern
- b) Find the value of "k".

Q)

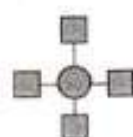
(b) Consider the pattern:

$1^2 + 1^2 = 1 \times 2$	
$1^2 + 1^2 + 2^2 = 2 \times 3$	
$1^2 + 1^2 + 2^2 + 3^2 = 3 \times 5$	
$1^2 + 1^2 + 2^2 + 3^2 + 5^2 = 5 \times 8$	
$1^2 + 1^2 + 2^2 + 3^2 + 5^2 + 8^2 = 8 \times 13$	

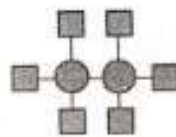
(i) Verify the result of the 5th line.  
 (ii) Using the results in (a), write down the next four lines in the pattern.  
 (iii) Describe how the terms in the sequence in (a) are connected in the pattern.

Judith designs a sequence of patterns consisting of circles and squares joined by straight lines. The first three patterns she designs are shown below.

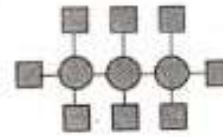
Q)



Pattern 1



Pattern 2



Pattern 3

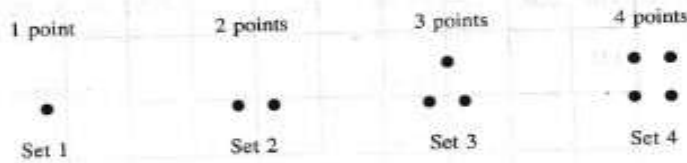


(a) Draw the next two patterns and complete the table below.

No. of circles	1	2	3	4	5	...	$n$
No. of squares	$2 \times (1 + 1) = 4$	$2 \times (2 + 1) = 6$	$2 \times (3 + 1) = 8$			...	$2 \times (n + 1)$
No. of straight lines	$3 \times 1 + 1$	$3 \times 2 + 1$	$3 \times 3 + 1$			...	

- (b) How many circles, squares and straight lines are there in the  
 (i) 10th pattern, (ii) 105th pattern?  
 (c) Find the number of circles and the number of straight lines in a pattern which has 30 squares.

24. Raymond draws different sets of points in a plane, no three of which are lying on a straight line. The first four sets of points are shown below.



When any two points are joined, a line segment is formed.

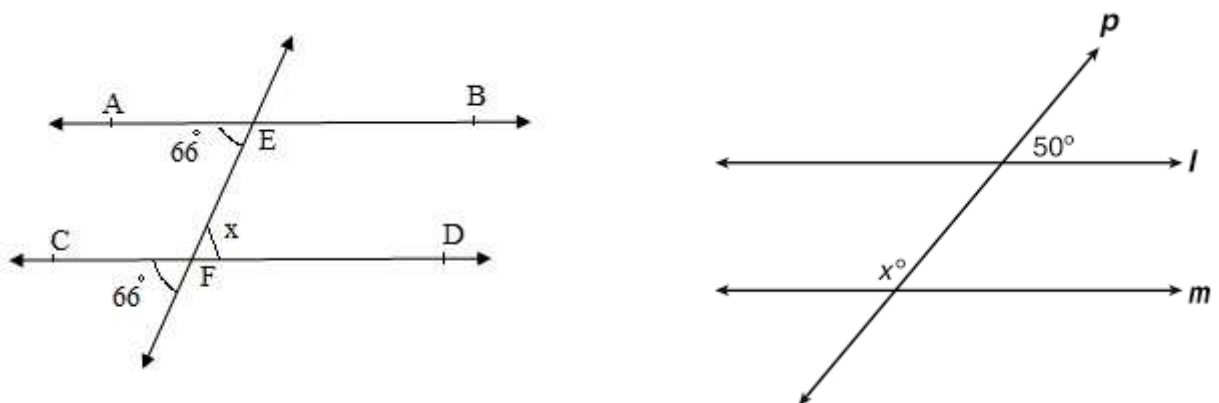
(a) Draw the next two sets of points and complete the table below.

No. of points	1	2	3	4	5	...	$n$
No. of line segments formed	$\frac{1 \times (1 - 1)}{2} = 0$	$\frac{2 \times (2 - 1)}{2} = 1$	$\frac{3 \times (3 - 1)}{2} = 3$			...	$\frac{n \times (n - 1)}{2}$

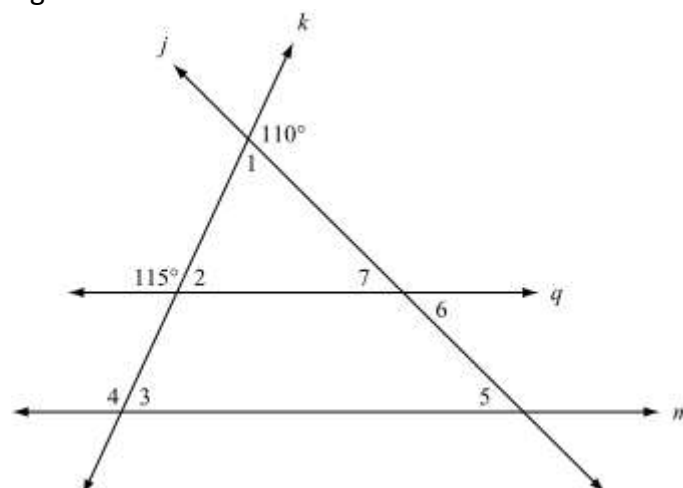
- (b) How many line segments can be formed in the pattern with  
 (i) 16 points (ii) 24 points?  
 (c) How many such points are needed to form 190 line segments?

### TOPIC: BASIC GEOMETRY

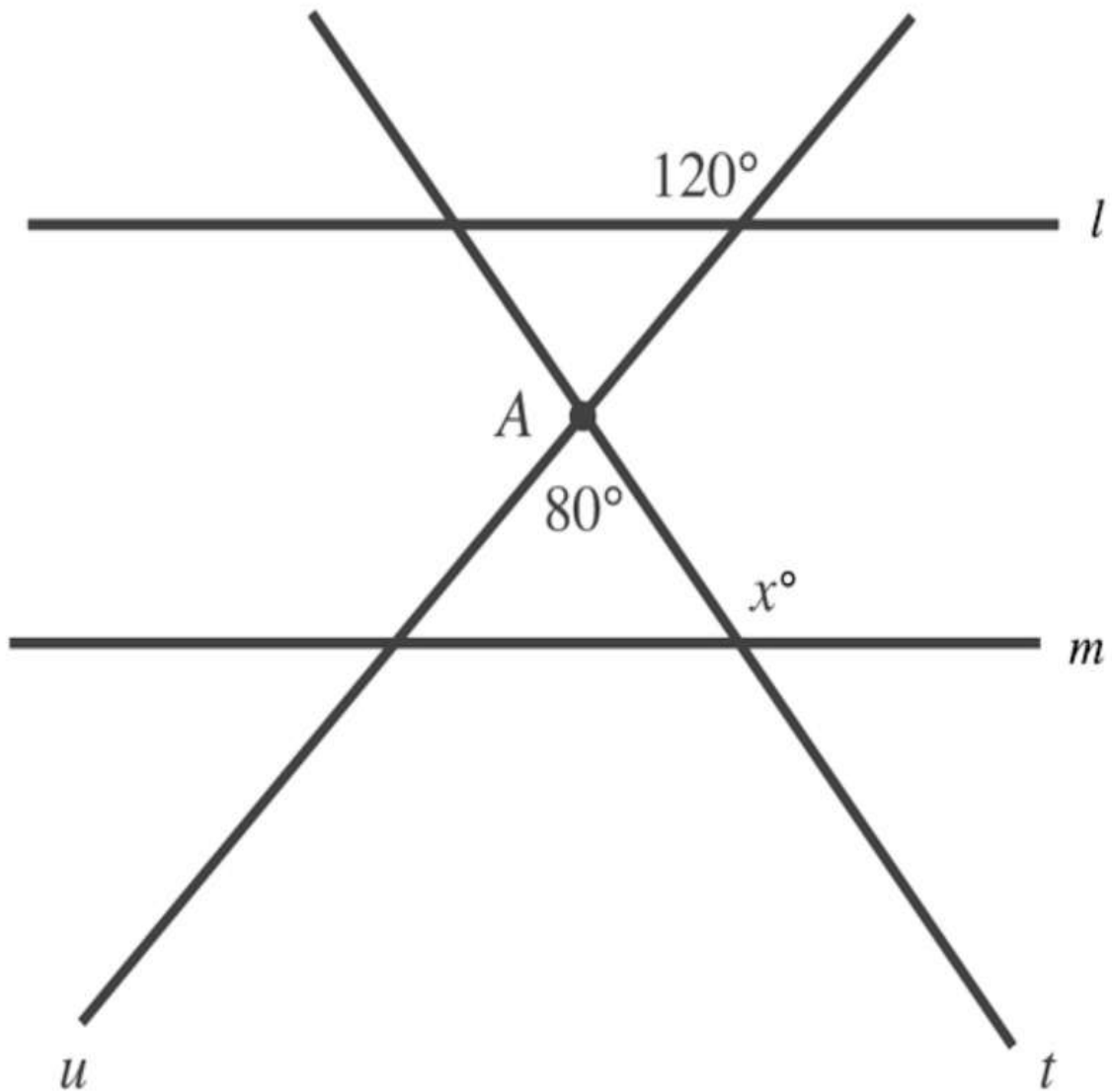
Q) Find the value of "x".



Q) Find the rest of the angles.

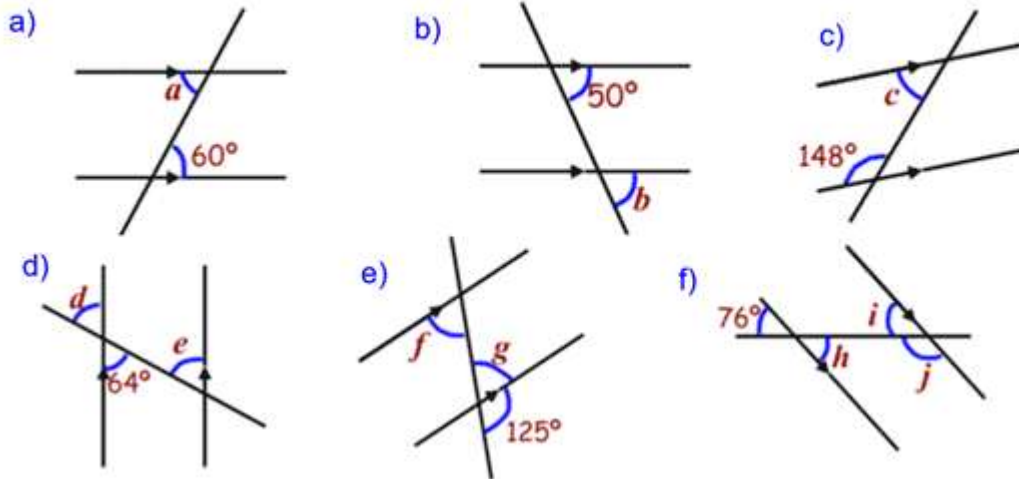


Q) Find the value of "x".





Using the three properties of angles in parallel lines calculate the missing angles.



Find the value of the marked angles with explanations.

