|	
Subject: Mathematics	**Revision Worksheet**
Name:	**Grade-Section**: 8 CS
Date:	**Teacher**: Zain Hattar

Objectives:

Revise the following: expressions and formulae, equations and inequalities, functions and graphs, area and perimeter of compound shapes and Pythagoras' Theorem.

Question 1

- **Write down a simplified expression for the perimeter of the rectangle ABCD giving your answer in terms of x.**

A ▢ B

5x

D   12x   C
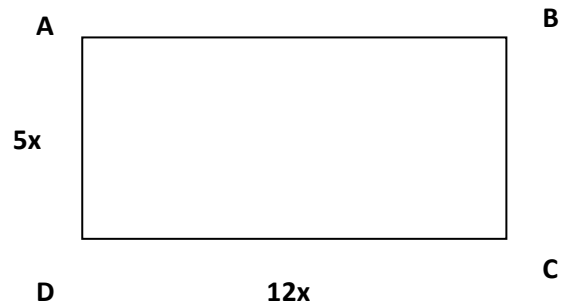
- **Collect like terms together and simplify.**

  - $x^2y^2 - 4xy + 3x^2y^2 + 13xy$

  - $17xy + 5a - 12xy - 10ab + 3xy + 33ab$

Question 2

Simplify. Write with a single positive index.

$(2x^3 y^{-2})^2 =$	$\dfrac{20x^2y^9z^5}{4xy^8z^5} =$

Expand and simplify to the simplest form. Show your work!

$3(x+y) + 2(x-y)$	$-(x-5) + 4x(x+2)$
$(x+4)(x-5)$	$(x+2)^2$

Question 3

A. Simplify the following algebraic fractions. Show your work!

- $\dfrac{2(x+1)}{4x+4} =$

- $\dfrac{3y^3 + 9y^2}{9y^2 + 27y} =$

B. Complete the following statements:

$x^2 - 49 = (x + \boxed{})\ (x - \boxed{})$

$x^2 + 20x + 100 = (x + \boxed{})^2$

$x^2 - 25 = (x + \boxed{})\ (x - \boxed{})$

$x^2 - 6x + 9 = (x - \boxed{})^2$

Question 4

Write as a single fraction in the simplest form. Show your work!

- $\dfrac{x}{5} + \dfrac{x}{3} =$

- $9 - \dfrac{9}{x} =$

- $\dfrac{2x}{10} + \dfrac{x}{3} + \dfrac{x}{15} =$

- $\dfrac{x}{4} - \dfrac{x}{12} + \dfrac{x}{6} =$

Question 5

I. Using the formula $A = x^2 + 5$

Find A when $x = 0.2$

Using the formula $A = 1000 \, x^3$

Find A when $x = 0.1$

II. Use the balance method to make y the subject of the formula.

- $15 = 3x + 2y$

- $x = \dfrac{2y}{3} + 1$

Question 6

I. **Solve the following equations:**

- **4x + 5 = 25**

x =_____

- **7(y - 1) = 2 – 2y**

y =_____

II. **Solve the following inequalities:**

- $\dfrac{2x - 3}{5} \leq 2$

- **55 ≤ 22 – 11x**

- **3x + 10 < 6x + 4 ≤ 2x + 28**

Question 7

- **Solve these simultaneous equations by elimination:**

a) **4x - 2y = 8**

   4x + 3y = 18

$$x = _____$$

$$y = _____$$

b) **x + 3y = 5**

   5x – 6y = 4

$$x = _____$$

$$y = _____$$

Accredited by   Cambridge Assessment International Education   Cambridge International School   edexcel   CIS COUNCIL OF INTERNATIONAL SCHOOLS   ib   Eco-Schools   معتمدة من

c) $3x - y = 1$
    $2x + 3y = 8$

x =_____

y =_____

- **Solve these simultaneous equations by substitution:**
  - $x - 3y = 1$
    $2x - 5y = 3$

x =_____

y =_____

- **x + 3y = 4**

  3x – 2y = 1

x =_____

y =_____

Question 8

   I.   **Find the gradient of the line joining (2, 5) and (4, 9).**

_____

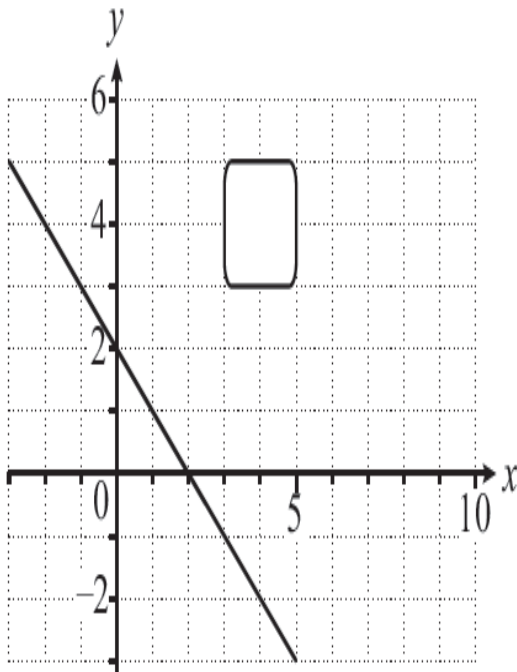   **II.**   **a) 3y = x + 12**

       b) y = 2x - 3

       c) 5y = 15 + 10x

       d) y = 2 - 3x

       Which of these lines have the same gradient?

_____

       What is the y-intercept of the line: 5y = 15 + 10x?
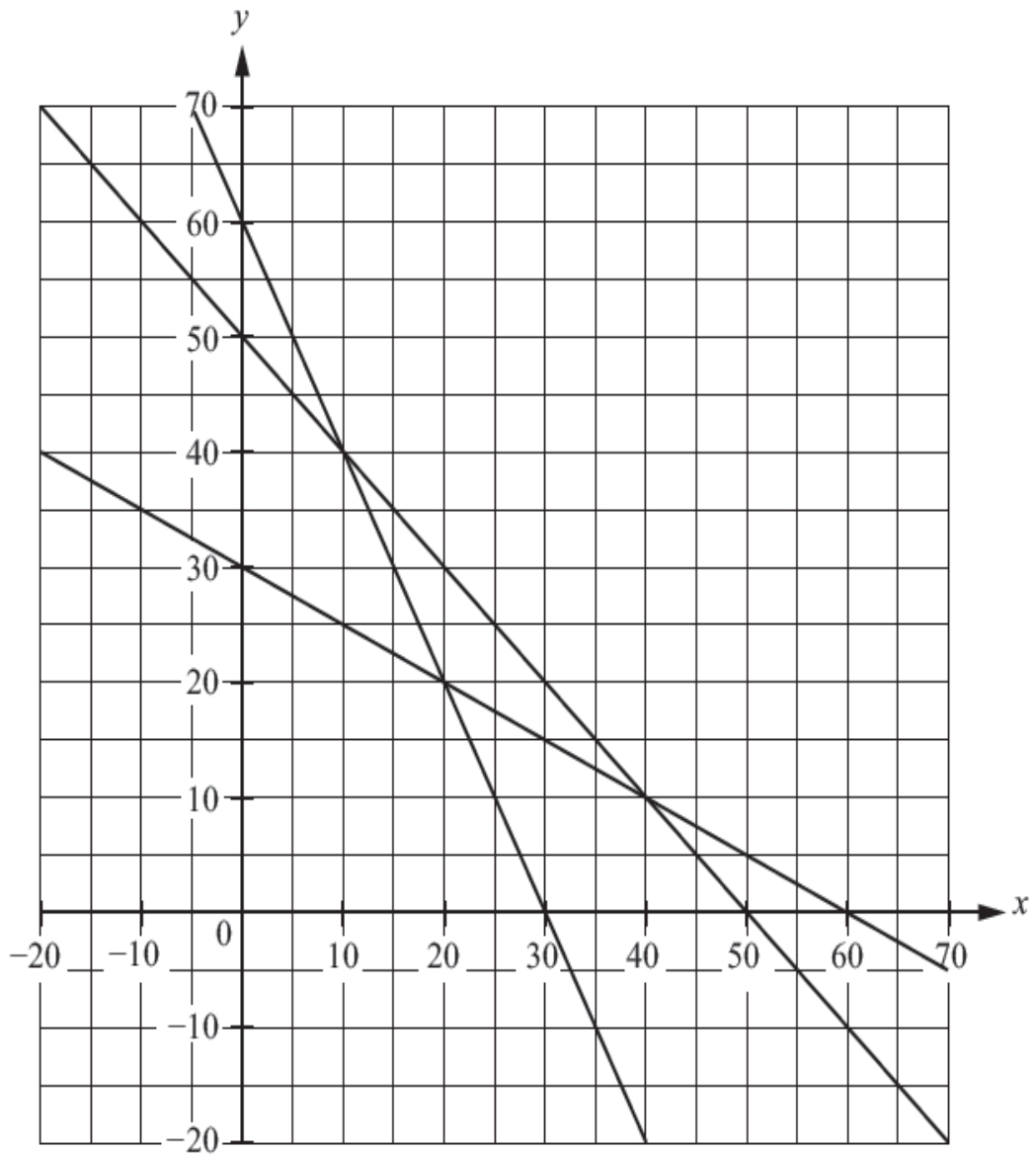
_____

Question 9

Tick ($\checkmark$) the graph of $y = 2x - 1$
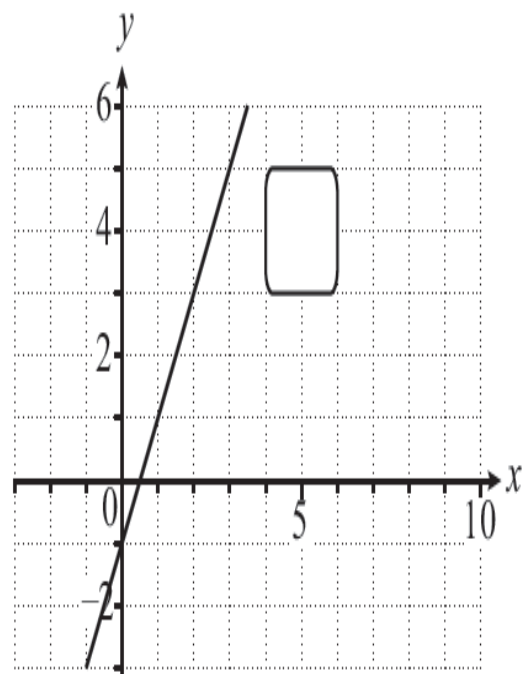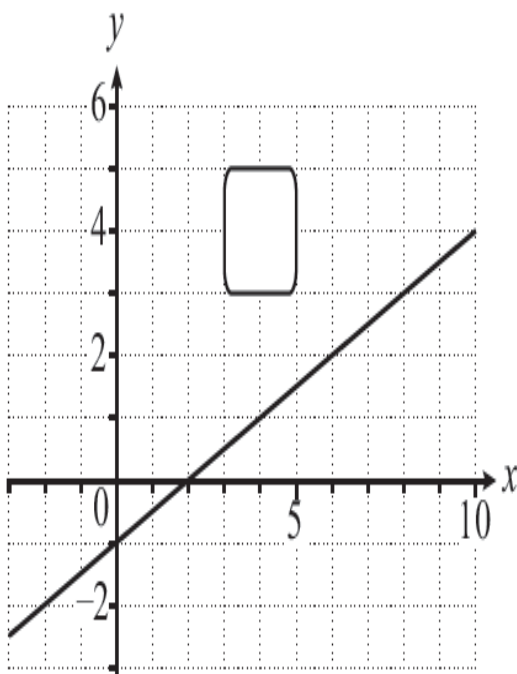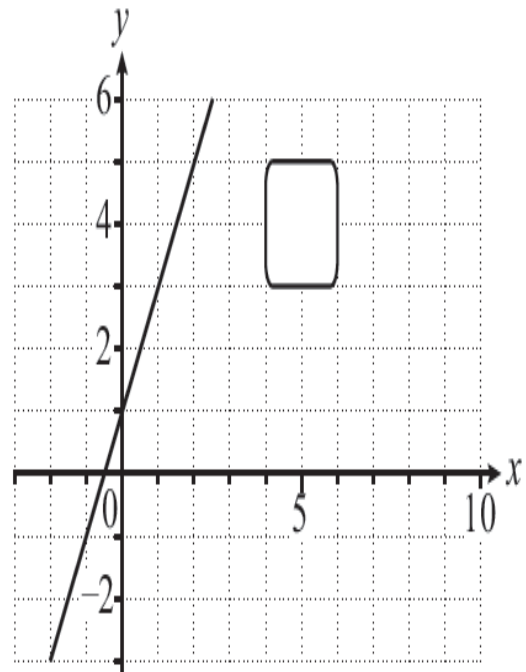
Question 10

Three lines are drawn on a graph.

Use the graph to solve simultaneously these two equations

$$x + y = 50 \qquad \text{and} \qquad 2x + y = 60$$

$x =$ ....

$y =$ ....

Accredited by   Cambridge Assessment International Education   Cambridge International School   edexcel   CIS COUNCIL OF INTERNATIONAL SCHOOLS   ib   المدارس الصحية   Eco-Schools   معتمدة من

Question 11

Here is a number line.

Tick (✓) which of these inequalities is shown on the number line.

$-2 \leq n \leq 5$ ☐

$-2 < n \leq 5$ ☐

$-2 \leq n < 5$ ☐

$5 \geq n < -2$ ☐

Question 12

Solve the following equations:

- $\dfrac{x}{2} - 3 = 1$

$\mathbf{x =}\underline{\hspace{2cm}}$

Accredited by   Cambridge Assessment International Education   Cambridge International School   edexcel   CIS COUNCIL OF INTERNATIONAL SCHOOLS   ib   المدارس الصحية   Eco-Schools   معتمدة من

- $8y - 4 = 2y + 8$

y =_____

- $6(x + 2) = - 2(x + 6)$

x =_____

- $4 + 2(5y - 1) = 6y - 18$

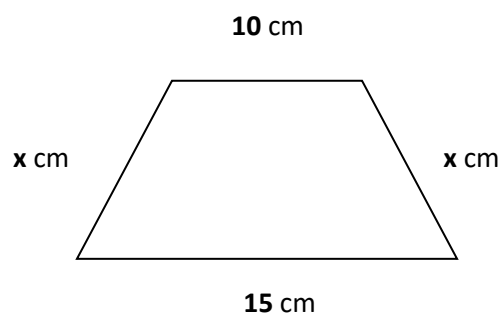**y =_____**

- $5(z - 2) = 3z - 7$

z =_____

Question 13

Solve the following problems by constructing and solving equations.
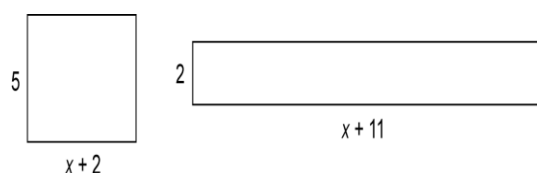
Show your work clearly.

A) The sum of three consecutive odd numbers is 57. What are the
   numbers?

B) If the perimeter of the following trapezium is 49 cm.
   Find the value of x.

10 cm

x cm   **x** cm

15 cm

C) These two rectangles have the same area. Find the value of x.

5

$x + 2$

2

$x + 11$

Question 14

Solve the following inequalities:

- $-2x \geq 18$

- $x + 7 \geq 28 - 6x$

- $\dfrac{7x - 9}{2} \leq 13$
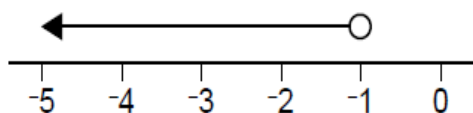
- $3x - 8 < 6x + 1 \leq 5x + 11$

Accredited by   Cambridge Assessment International Education   Cambridge International School   edexcel   CIS COUNCIL OF INTERNATIONAL SCHOOLS   ib   المدارس الصحية   Eco-Schools   معتمدة من

Question 15

I) Write the inequality represented by each of these number lines in the box below:

a)


```
-1   0   1   2   3   4   5
```

b)


```
-5   -4   -3   -2   -1   0
```
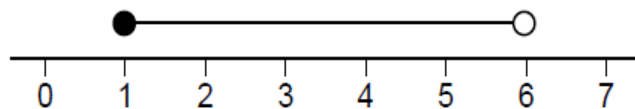
c)


```
0   1   2   3   4   5   6   7
```
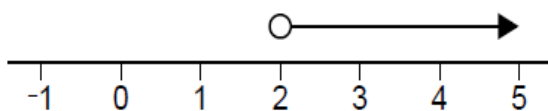
II) Which whole numbers from 10 to 20 make both inequalities true?

$$2x - 13 \leq 19 \quad \text{and} \quad 5x - 5 \geq 50$$

Question 16

Some children are feeding cats. Altogether the cats and the children have 8 heads and 26 feet.

How many children and how many cats are there?

_____Children
_____Cats

Question 17

a) Find the gradient of the line joining the points (1, 4) and (5, 12).

b) Find the gradient of the line joining the points (2, 7) and (6, 5).

Accredited by   Cambridge Assessment
                  International Education
                  Cambridge International School   edexcel   CIS   ib   Eco-Schools   معتمدة من
                                                                  COUNCIL OF
                                                                  INTERNATIONAL
                                                                  SCHOOLS

Question 18

I. **Find the gradient and the y-intercept for each of the following lines:**

	Equation of the line	Gradient	y-intercept
a	$y = x + 10$		
b	$y = 2x - 2$		
c	$y = 3 - 4x$		
d	$2y = 8x - 2$		
e	$3y - 12x = 6$		
f	$4y = 8 - 2x$		

Accredited by   Cambridge Assessment International Education   Cambridge International School   edexcel   CIS COUNCIL OF INTERNATIONAL SCHOOLS   ib   المدارس الصحية   Eco-Schools   معتمدة من

II. Using the previous table:

- **Which of these lines has a positive gradient?**

  _____

- **Which of these lines has a negative gradient?**

  _____

- **Which pairs of lines have the same gradient?**
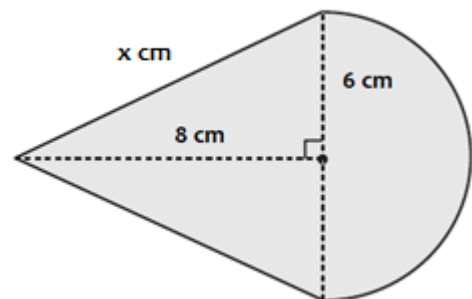
  _____

- **Which pairs of lines are parallel?**
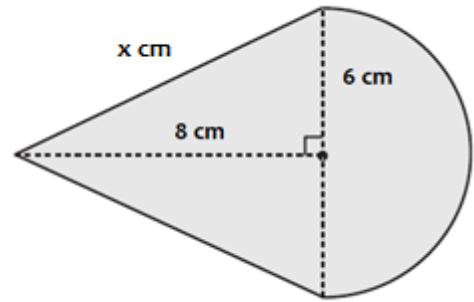
  _____

Question 19

Find the area and perimeter of the following compound shape:

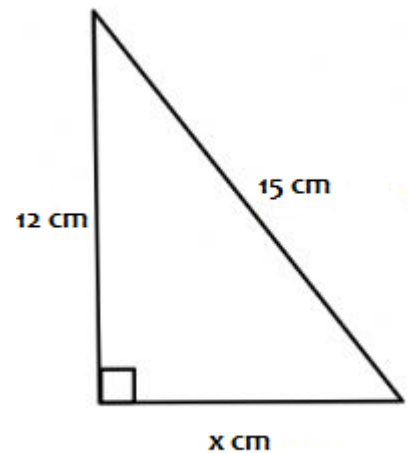*** Leave your answers in terms of π**

  a) **Area**

b) Perimeter

Question 20

Find the unknown length represented by the letter x.

Thank you!