7. Merissa works a regular 40 hours per week with overtime paid at time and a half. Last week she worked 48 hours in total.

(a) Letting x represent her hourly wage, write down and simplify an expression for her total earnings for last week. [3]

Expression for Regular Earnings =

Expression for Over Time Earnings =

Expression for Total Earnings =

Her total earnings last week was \$650.

(b) Use your results in (a) to write down and solve an equation for her hourly wage. [2]

Equation for Total Earnings =

Hourly Wage =

7. The sum of the first n natural numbers is given by the formula

$$S = \frac{n(n+1)}{2}$$

Use the formula to calculate

(a) the sum of the first 50 natural numbers, [2]

S = ——————— =

(b) the amount of natural numbers that add up to 210. [5]

Equation After Substituting

——————— = 210

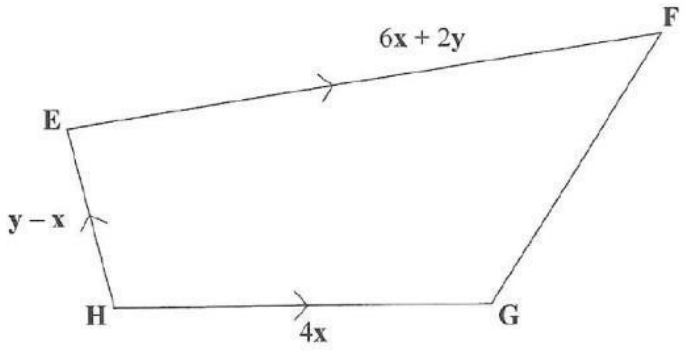
Equation After Simplifying

=

n = or

Amount of Natural Numbers =

7. Express in terms of x and y in simplest terms.



(a) $\overrightarrow{HM}$, where M is the midpoint of $\overrightarrow{EF}$ [2]

Half EF =

Vector HM =

(b) $\overrightarrow{GF}$ [2]

7. The population of Spain in 2016 was 46 million people. If this amount increases by 5% each year, calculate the population of Spain in 2019 to nearest million. [3]

Population in 2017 =

Population in 2018 =

Population in 2019 =

7. (a) Factorise.

(i) $12x^3 - 75x$ [3]

(ii) $3ay - by - 6a + 2b$ [3]

(b) Factorise and simplify.

$$\frac{2x-3}{2x^2+5x-12}$$ [3]

Fraction after Factorizing

_____

( )( )

Fraction after Simplifying

_____

7.

p	2	10	
q	15		240

In the table above, q varies inversely as the square of p.

Generic Proportional Formula = ——

The Value of The Constant Multiplier =

Find the missing value of

(a) q, [4]

Proportional Formula with substitution = ——

q =

(b) p. [3]

Proportional Formula with substitution

240 = ——

p =

7. (a) Factorise completely

(i) $2ax - bx + 12ay - 6by$ [3]

(ii) $x^2 - 36y^2$ [2]

(b) Hence, simplify $\frac{x^2 - 36y^2}{2ax - bx + 12ay - 6by}$ [2]