

# Post Lent Term Test Sheet 1

1.  $G = \frac{5}{8}D + 34$

(a) Find a formula for  $D$  in terms of  $G$ .

$$D = \frac{8}{5}(G - 34)$$

(b) If  $G = 10$ , find  $D$ .

$$D = -38.4$$

(c) If  $G = D$ , find the value of  $D$ .

$$D = 90\frac{2}{3}$$

2. Solve the following:

(a)  $6x^2 = 5x$ .

$$x = 0 \text{ or } x = \frac{5}{6}$$

(b)  $(3x - 2)(x + 5) = 0$ . [Anyone multiplying out here will be summarily shot!]

$$x = \frac{2}{3} \text{ or } x = -5$$

(c)  $9x^2 - 25 = 0$ .

$$x = -\frac{5}{3} \text{ or } x = \frac{5}{3}$$

3. Triangle  $ABC$  is similar to triangle  $XYZ$  (respectively).  $XY = y + 1$ .  $YZ = 5$ .  $AB = y + 3$ .  $BC = 6$ . Find the value of  $y$ .

$$y = 9$$

4. Triangle  $PQR$ .  $PQ = PR = 7$ .  $QR = 3$ . Find angle  $Q\hat{P}R$ .

$$Q\hat{P}R = 24.747\dots$$

5. (a) Find the equation of the line through  $(5, -1)$  and  $(7, -7)$ .

$$y = -3x + 14$$

(b) The line  $3x + 5y = 120$  crosses the  $x$ -axis at  $A$  and the  $y$ -axis at  $B$ . Find  $A$  and  $B$ .

$$A(40, 0), B(0, 24)$$

(c) Find (to 3sf) the length between  $(3, -2)$  and  $(-1, 5)$ .

$$8.06$$

6. (a) Find (in the form  $ax + by + c = 0$ ) the line with gradient  $-\frac{2}{3}$  that passes through  $(-1, 3)$ .

$$2x + 3y - 7 = 0$$

(b) Find where the line  $y = \frac{3}{2}x + \frac{1}{2}$  intersects the line  $2x - 5y = 7$ .

$$(x, y) = (-\frac{19}{11}, -\frac{23}{11})$$

7. (a) The mass of Mr Stone has increased 17% over the last year. If he now has a mass of 110kg, find (to 2 dp) his mass at the start of the year.

$$94.02\text{kg}$$

(b) Tiffany is a lawyer. She was paid a salary and a 23% bonus this year. If she was paid £230,000 how much was her bonus (to the nearest pound)?

$$£43,008$$

8. Charlie Sheen has two geometrically similar pipes. The smaller one has a volume of  $30\text{cm}^3$ . The larger one has a volume of  $51.84\text{cm}^3$ . Find the length of the smaller one if the larger one is 9cm long.

$$7.5\text{cm}$$

9. 60 people are surveyed as to whether they like football or rugby. 40 like rugby. 29 like football. 10 like neither.

(a) Draw a Venn diagram of the situation.

(b) Find how many people like both football and rugby.

$$19$$

10. The total surface area of a cone is  $20\pi$  (including the circular base). If the slant height is 1cm, find  $r$ .

$$r = 4$$