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| **S3 National 5 Homework Exercise 10** | | | | | | | | | | | | | | C:\Users\Ian\Pictures\CHS.jpg | | | |
|  | | | | | | | | | | | | | |
| **Straight Lines** | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | |
| Issued by: | | |  | | | | | | | Return by: | | | |  | | | |
|  | | | | | | | | | | | | | | | | | |
| **Working MUST be shown in every answer** | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | |
| **1.** | Write down the gradient of each line shown in the diagram opposite. | | | | | | | | | | G  I  A  B  C  D  E  F  H  J  K  L | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
| **2.** | a) | State the gradient and y-intercept of the line *y* = 3*x* – 5 | | | | | | | | | | | | | | | |
|  |  |  | | | | | | | | | | | | | | | |
|  | b) | State the gradient and y-intercept of the line *y* = *x* + | | | | | | | | | | | | | | | |
|  |  |  | | | | | | | | | | | | | | | |
|  | c) | State the equation of a line with gradient 17 and y-intercept (0, 0) | | | | | | | | | | | | | | | |
|  |  |  | | | | | | | | | | | | | | | |
|  | d) | State the equation of the line passing through (0, -5) with gradient -2 | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
| **3.** | Find the gradient of the line joining the points: | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
|  | a) | A (1, 1) & B (4, 5) | | | | b) | | | C (-1, 3) & D (2, -3) | | | | | | c) | | E (-4, -1) & F (3, -1) |
|  |  | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
| **4.** | Find the equation of the line through the points, giving your answer in the stated form: | | | | | | | | | | | | | | | | |
|  |  | | |  | | | |  | | | | | | | | | |
|  | a) | L (3, 4) & M (0, -5) | | | b) | | P (-3, -2) & Q (1, 10) | | | | | | c) | | | S (-2, 3) & T (4, 0) | |
|  |  | (in the form y = mx + c) | | |  | | (in the form y = mx + c) | | | | | |  | | | (in the form Ax + By + C = 0) | |
|  |  | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
| **5.** | The cooking instructions for a frozen turkey state that it should be cooked for a certain length of time for every kilogram it weighs, plus an extra number of minutes. | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
|  | A 4kg turkey takes 140 minutes to cook, whereas a 7kg turkey takes 215 minutes. | | | | | | | | | | | •  (4, 140)  •  (7, 215)  W (kg)  T  (mins) | | | | | |
|  |  | | | | | | | | | | |
|  | This can be shown in the graph opposite. | | | | | | | | | | |
|  |  | | | | | | | | | | |
|  | a) | Find the equation of the line in terms of W and T. | | | | | | | | | |
|  |  |  | | | | | | | | | |
|  | b) | Use your equation to find the cooking time required for a 6kg turkey. | | | | | | | | | |
|  |  |  | | | | | | | | | |
|  | c) | The cooking instructions on one frozen turkey say it should be cooked for 2 hours, 57.5 minutes. | | | | | | | | | |
|  |  |  | | | | | | | | | |  | | | | | |
|  |  | What is its weight? | | | | | | | | | | | | | | | |
|  |  |  | | | | | | | | | | | | | | | |
|  |  |  | | | | | | | | | | | | | | | |
| **6.** | On plain paper, sketch the graph of 4*x* – 6*y* + 24 = 0 (**HINT:** find where the graph cuts the axes). | | | | | | | | | | | | | | | | |

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| **Q.** | **Award 1 Mark for each ●** | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
| **1.** | **●** mAB = 3/5 | | **●** mCD = 1 | | **●** mEF = -1/11 | | | **●** mGH = 0 | | | | **●** mIJ = - 4 | | | | **●** mKL = undefined | |
|  |  | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
| **2.** | a) | ● m = 3  ● (0, -5) | | b) | ● m = -1/2  ● (0, 7/2) | | | | c) | | ● y = 17x | | | | d) | | ● y = -2x - 5 |
|  |  |  | |  |  | | | |  | |  | | | |  | |  |
|  |  |  | |  |  | | | |  | |  | | | |  | |  |
| **3.** | a) | ●1 m = | | b) | ● - 2 | | | | c) | | ● 0 | | | | NB: formula must appear at least once in Q3 for ●1 | | |
|  |  | ● | |  |  | | | |  | |  | | | |
|  |  |  | |  |  | | | |  | |  | | | |  | |  |
|  |  |  | |  |  | | | |  | |  | | | |  | |  |
| **4.** | a) | ● m = 3 | | | | b) | ● m = 3 | | | | | | c) | ● m = - ½ | | | |
|  |  | ● y = 3x - 5 | | | |  | ● y – 10 = 3(x – 1) OR | | | | | |  | ● y – 3 = - ½(x + 2) OR | | | |
|  |  |  | | | |  | y + 2 = 3(x + 3) | | | | | |  | y – 0 = - ½(x – 4) | | | |
|  |  |  | | | |  | ● y = 3x + 7 | | | | | |  | ● x + 2y – 4 = 0 | | | |
|  |  |  | | | |  |  | | | | | |  |  | | | |
|  |  |  | | | |  |  | | | | | |  |  | | | |
| **5.** | a) | ● m = 25 | | | | b) | ● T = 25(6) + 40 | | | | | | c) | ● 177.5 minutes | | | |
|  |  | ● y – 140 = 25(x – 4) OR | | | |  | ● 190 minutes | | | | | |  | ● 25W + 40 = 177.5 | | | |
|  |  | y - 215 = 25(x – 7) | | | |  |  | | | | | |  | ● W = 5.5kg | | | |
|  |  | ● y = 25x + 40 | | | |  |  | | | | | |  |  | | | |
|  |  | ● T = 25W + 40 | | | |  |  | | | | | |  |  | | | |
|  |  |  | | | |  |  | | | | | |  |  | | | |
|  |  |  | | | |  |  | | | | | |  |  | | | |
| **6.** | ●sets x = 0  ● y = 4  ● sets y = 0  ● x = -6  ● straight line through (-6, 0) and (0, 4) shown | | | | | | | | |  | | | | | | | |
|  |  | | | | | | | | |  | | | | | | | |
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|  | **TOTAL = 38 marks** | | | | | | | | | | | | | | | | |