National 5 Revision H Paper 1 (based on Credit 2010)

1. Evaluate

$$40\% \text{ of } £11{\cdot}50 - £1{\cdot}81.$$ 2

2. Evaluate

$$\frac{2}{5} \div 1\frac{1}{10}.$$ 2

3. Change the subject of the formula to s.

$$t = \frac{7s+4}{2}.$$ 3

4. Two functions are given below.

$$f(x) = x^2 - 4x$$

$$g(x) = 2x + 7$$

(*a*) If $f(x) = g(x)$, show that $x^2 - 6x - 7 = 0$. 2

(*b*) Hence find **algebraically** the values of x for which $f(x) = g(x)$. 2

5. A bag contains 27 marbles. Some are black and some are white.

The probability that a marble chosen at random is black is $\frac{4}{9}$.

(*a*) What is the probability that a marble chosen at random is white? 1

(*b*) How many white marbles are in the bag? 1

6. Cleano washing powder is on special offer.

Each box on special offer contains 20% more powder than the standard box.

A box on special offer contains 900 grams of powder.

3

7. A straight line has equation $y = mx + c$, where m and c are constants.

(*a*) The point (2, 7) lies on this line.

Write down an equation in m and c to illustrate this information. 1

(*b*) A second point (4, 17) also lies on this line.

Write down another equation in m and c to illustrate this information. 1

(*c*) Hence calculate the values of m and c. 3

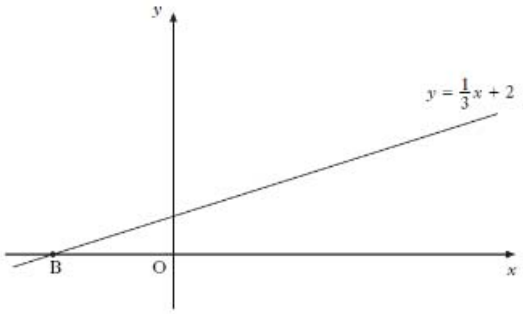
(*d*) Write down the gradient of this line. 1

8. (*a*) Simplify $\sqrt{2}\times\sqrt{18}$. 1

(*b*) Simplify $\sqrt{2}+\sqrt{18}$. 1

(*c*) Hence show that $\dfrac{\sqrt{2}\times\sqrt{18}}{\sqrt{2}+\sqrt{18}} = \dfrac{3\sqrt{2}}{4}$. 2

9. Part of the graph of the straight line with equation $y = \frac{1}{3}x + 2$, is shown below.



(*a*) Find the coordinates of the point B. 2

(*b*) For what values of x is $y < 0$? 1

10. A number pattern is shown below.

$$1^3 = \frac{1^2\times2^2}{4}$$

$$1^3+2^3 = \frac{2^2\times3^2}{4}$$

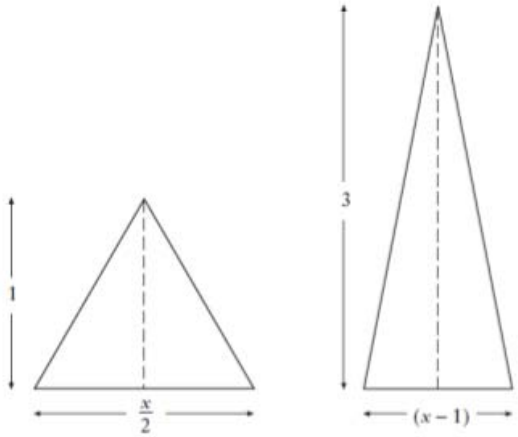
$$1^3+2^3+3^3 = \frac{3^2\times4^2}{4}$$

(*a*) Write down a similar expression for $1^3 + 2^3 + 3^3 + 4^3 + 5^3$. 1

(*b*) Write down a similar expression for $1^3 + 2^3 + 3^3 + \ldots + n^3$. 2

(*c*) Hence **evaluate** $1^3 + 2^3 + 3^3 + \ldots + 9^3$. 2

11. Two triangles have dimensions as shown.



The triangles are equal in area.

Calculate the value of x. 4

12. The vectors $\underline{\mathbf{a}}$ and $\underline{\mathbf{b}}$ are given below. $\underline{\mathbf{a}} = \begin{bmatrix} 6 \\ -3 \end{bmatrix}$ $\underline{\mathbf{b}} = \begin{bmatrix} -2 \\ 3 \end{bmatrix}$

Find $\left|\underline{\mathbf{a}} + \underline{\mathbf{b}}\right|$ 3