RIGOUR

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Numeracy for Learning, Life and Work

April National 5 Maths Calendar

#abitofmathseveryday

1 Write the following in the form…

$y = (x + a)^2 + b.$

$y = x^2 - 4x + 5$

2 Multiply out the following brackets and simplify…

$(3x - 7)(x^2 - 6x - 2)$

3 Change the subject of the formula to u…

$d = \dfrac{y + 6}{u}$

4 Multiply out the following brackets and simplify…

$(4x - 5)(x^2 - 7x + 8)$

5 Find the equation of the line passing through…

$(3, 8)$ and $(7, -4)$

6 Simplify…

$\sqrt{80} + \sqrt{5} - \sqrt{45}$

7 Calculate the standard deviation of the following data set…

70, 71, 72, 78, 79

8 Evaluate…

$36^{\frac{3}{2}}$

9 Find the point of intersection between the straight lines $5x + 2y = 7$ and $2x - 3y = 37$.

10 Divide the following fractions…

$\dfrac{7p^2}{10} \div \dfrac{p}{2}$

11 Simplify…

$\dfrac{x^2 - 16x}{x^2 - 14x - 32}$

12 Calculate…

$\frac{2}{5}$ of $1\frac{1}{4} + \frac{3}{7}$

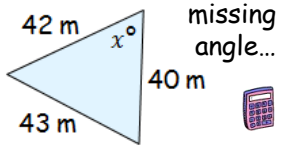
13 Factorise…

$50x^2 - 72y^2$

14 Calculate the semi-interquartile range for the following data set…

2, 4, 7, 8, 12, 14, 18

15 Calculate the size of the missing angle…



16 Express $6\mathbf{a} - \mathbf{b} + \frac{1}{3}\mathbf{c}$ in component form.

$\mathbf{a} = \begin{pmatrix} 1 \\ -3 \\ 0 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 2 \\ 4 \\ -5 \end{pmatrix}$ $\mathbf{c} = \begin{pmatrix} -6 \\ 0 \\ 18 \end{pmatrix}$

17 The temperature in a greenhouse drops by 3% per hour. At 8pm the temperature is 26°C. What will the temperature be at midnight?

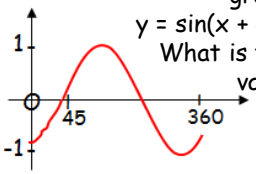
18 Evaluate…

$(4x^3)^2$

19 Solve the following equation…

$\dfrac{3x - 9}{4} = 6$

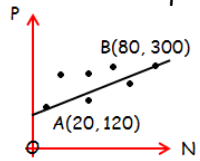
20 Shown is the graph $y = \sin(x + a)°$. What is the value of a?



21 Express the following with a rational denominator and simplify if required…

$\dfrac{\sqrt{2}}{\sqrt{6}}$

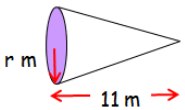
22 Calculate the equation of the line of best fit.



23 Determine the gradient and the y-intercept of the following equation…

$x - 3y = 12$

24 The volume of this cone is 11·51 m³. Calculate it's radius…



25 A function is defined as $f(a) = a^2 + 2a - 1$ For what value(s) of a does $f(a) = 7$?

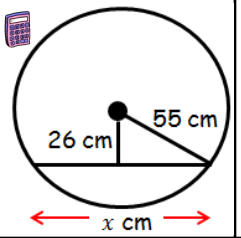
26 Solve the equation

$5 \tan x° - 3 = 2$

for $0 \leq x \leq 360$.

27 A runner increased the distance he ran in a week by 20%. This week he ran 36 miles. How far did he run the previous week?

28 Find the value of x…



29 Identify the y-intercept, the coordinates and nature of the turning point and the equation of the axis of symmetry.

$y = 7 - (x - 4)^2$

30 The following milk bottles are mathematically similar. Calculate the missing volume…