

## FINDING FORMULA

### Pearson Edexcel - Tuesday 21 May 2019 - Paper 1 (Non-Calculator) Higher Tier

1.

20	$h = \frac{120}{\sqrt{t}}$	P1	for setting up a proportional relationship between $h$ and $p$ , eg $h \propto \frac{1}{p}$ or $h = \frac{k}{p}$ <b>OR</b> a proportional relationship between $p$ and $t$ , eg $p \propto \sqrt{t}$ or $p = K\sqrt{t}$	Condone the use of ' $\propto$ ' instead of '=' for the first two P marks  Relationship may be implied by substitution
		P1	for process to substitute at least 2 values, eg $10 = \frac{k}{6}$ ( $k = 60$ ) or $6 = K\sqrt{144}$ ( $K = 0.5$ )	
		P1	for full process leading to $h = \frac{60}{p}$ or $p = 0.5\sqrt{t}$ or	Both constants must come from a correct process
		A1	$h = \frac{120}{\sqrt{t}}$ or $h = \frac{120\sqrt{t}}{t}$ or $h = \frac{60}{0.5\sqrt{t}}$	Formula for $h$ in terms of $t$ Does not need to be in simplest form

### Pearson Edexcel - Thursday 24 May 2018 - Paper 1 (Non-Calculator) Higher Tier

2.

14	$y = \frac{100}{9x^4}$	P1	for setting up a correct proportional relationship, eg $d \propto x^2$ or $d = kx^2$	Condone the use of ' $\propto$ ' instead of '=' for the four P marks
		P1	for setting up a second proportional relationship, eg $y \propto \frac{1}{d^2}$ or $y = \frac{K}{d^2}$	
		P1	(dep P1) for a process to find one of the constants of proportionality eg $24 = k \times 2^2$ ( $k = 6$ ) or $4 = K \div 100$ ( $K = 400$ )	
		P1	full process to find $y$ in terms of $x$ eg $y = \frac{400}{(6x^2)^2}$ or	
		A1	$y = \frac{100}{9x^4}$ or	Both constants must come from a correct process  Expression must have been simplified, but could be given other equivalent ways eg $y = 11.1111.. x^{-4}$

### Pearson Edexcel - Thursday 24 May 2018 - Paper 1 (Non-Calculator) Higher Tier

3.

19	$b = \frac{2}{3}a + 2$	P1	for process to rearrange the equation to give $y$ in terms of $x$ eg $y = \frac{7-3x}{2}$ or $y = -\frac{3}{2}x + \left(\frac{7}{2}\right)$ or $m = -\frac{3}{2}$	
		P1	for using their gradient in $mn = -1$	
		P1	for showing a process to find the gradient of $PQ$ eg $\frac{b-4}{a-3}$ <b>OR</b> for substituting $x = 3$ and $y = 4$ in $y = \frac{2}{3}x + c$	
		P1	(dep P3) for forming an equation in $a$ and $b$ eg $\frac{b-4}{a-3} = \frac{2}{3}$ or $b = \frac{2}{3}a + 2$ <b>OR</b> correct equation in terms of $x$ and $y$ eg $y = \frac{2}{3}x + 2$	$y - 4 = \frac{2}{3}(x - 3)$ gets P4
		A1	for $b = \frac{2}{3}a + 2$ oe	Accept 0.66 or 0.67 oe for 2/3

**Pearson Edexcel - Specimen Papers Set 2 - Paper 1 (Non-Calculator) Higher Tier**

4.

11	$\frac{4}{3 \times 2} \pi x^3 + \frac{4}{3} \pi x^3 = 2 \pi x^3$  $(2x)^2 \pi h = 4x^2 \pi h$ $4x^2 \pi h = 2 \pi x^3$	$h = \frac{x}{2}$	P1 Process to find volume of cone or hemisphere P1 Process to total volume of solid P1 Process to find volume of cylinder P1 Equates 2 volumes A1 Reaches $h = \frac{x}{2}$
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**Pearson Edexcel - Thursday 26 May 2016 - Paper 1 (Non-Calculator) Higher Tier**

5.

9		$T = 5x + 20y$	3	B3 for $T = 5x + 20y$ oe (B2 for $5x + 20y$ or $T = 5x + y$ or $T = x + 20y$ or $T = 20x + 5y$ ) (B1 for $T =$ a two term linear expression in $x$ and $y$ , or $5x + y$ or $x + 20y$ )
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**Pearson Edexcel - Wednesday 5 November 2014 - Paper 1 (Non-Calculator) Higher Tier**

6.

4		$T = 6x + 8y$	3	M1 for $6x$ or $8y$ oe or $T =$ (a linear expression in $x$ and $y$ ) M1 for $6x + 8y$ oe or $T = 6x (+ay)$ oe or $T = 8y (+bx)$ oe A1 for $T = 6x + 8y$ oe
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**Pearson Edexcel - Friday 2 March 2012 - Paper 3 (Non-Calculator) Higher Tier**

7.

9		$S = 20B + 30T$	3	B3 for $S = 20B + 30T$ oe (B2 for $20B + 30T$ or $S = 20B + T$ or $S = B + 30T$ or $S = 30B + 20T$ ) (B1 for $S =$ a linear expression in $B$ and $T$ , or $20B + T$ or $B + 30T$ )
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Pearson Edexcel - Monday 6 June 2011 - Paper 3 (Non-Calculator) Higher Tier

8.

25	$\pi x l = 2\pi x^2$ $h^2 + x^2 = 4x^2$ $h^2 = 3x^2$  <b>Alternative</b> $\pi x \sqrt{h^2 + x^2} = 2\pi x^2$ $\sqrt{h^2 + x^2} = 2x$ $h^2 + x^2 = 4x^2$ $h^2 = 3x^2$	$\sqrt{3}x$	4	<p>B1 for curved surface area of one of the shapes e.g. <math>\pi x l</math> or <math>2\pi x^2</math></p> <p>M1 for attempt to equate surface areas e.g. <math>\pi x l = 2\pi x^2</math> or <math>l = 2x</math></p> <p>M1 for attempt to connect <math>h</math> and <math>x</math> using Pythagoras's theorem e.g. <math>h^2 + x^2 = 4x^2</math></p> <p>A1 for <math>\sqrt{3}x</math> or <math>\sqrt{3x^2}</math></p> <p><b>Alternative</b></p> <p>B1 for <math>h^2 + x^2 = 4x^2</math> oe</p> <p>M1 for attempt to equate surface areas e.g. <math>\pi x \sqrt{h^2 + x^2} = 2\pi x^2</math> oe</p> <p>M1 (dep) for attempt to square both sides of their formula e.g. <math>h^2 + x^2 = 4x^2</math></p> <p>A1 for <math>\sqrt{3}x</math> or <math>\sqrt{3x^2}</math></p> <p>SC B1 for attempt to equate surface areas in terms of <math>r</math>, rather than <math>x</math></p>
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Pearson Edexcel - Friday 12 November 2010 - Paper 4 (Calculator) Higher Tier

9.

12		$T = 7x + 5y$	3	<p>B3 for <math>T = 7x + 5y</math> oe</p> <p>(B2 for <math>7x + 5y</math> oe or <math>T = 7x + \dots</math> or <math>T = \dots + 5y</math>)</p> <p>(B1 for <math>T =</math> an expression in <math>x</math> and <math>y</math> or <math>7x</math> or <math>5y</math> seen)</p>
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Pearson Edexcel - Thursday 5 November 2009 - Paper 3 (Non-Calculator) Higher Tier

10.

12		$N = 4p + 20b$	3	<p>B3 for <math>N = 4p + 20b</math> oe</p> <p>(B2 <math>4p + 20b</math> as an expression not in a formula Or <math>N = k + 20b</math> oe or <math>N = 4p + k</math> oe <math>k \neq 0</math>)</p> <p>(B1 for <math>N = cp + db</math>, <math>c</math> and <math>d</math> numerical and not both zero Or <math>k + 20b</math> oe or <math>4p + k</math> oe any <math>k \neq 0</math>)</p> <p>SC B2 for <math>N = 4p + 20b</math> subsequently incorrectly simplified</p> <p>SC B2 for <math>kN = 4p + 20b</math> (<math>k \neq 1</math>)</p> <p>SC B1 for <math>4p + 20b</math> subsequently incorrectly simplified</p> <p>SC B1 for <math>N = 4p</math> (space) <math>20b</math> or <math>N = 4p \times 20b</math></p>
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Pearson Edexcel - Tuesday 10 November 2009 - Paper 4 (Calculator) Higher Tier

11.

25	(a)	$y = kx$ $10 = k \times 500$	$y = \frac{1}{50}x$	3	M2 for $10 = k \times 500$ oe or $10 = \frac{500}{k}$ oe  (M1 for $y = kx$ or $y = \frac{x}{k}$ or $y \propto x$ )  A1 for $y = \frac{1}{50}x$ oe (eg $y = 0.02x$ )
	(b)		7	1	B1 ft from linear $y = kx$

**AQA GCSE – Wednesday 8 November 2017 – Paper 3 (Calculator) Higher Tier**

**12.**

20	3rd box indicated	B1	
	<b>Additional Guidance</b>		