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| Question 1 Simplify $\sqrt{224} + 2\sqrt{14}$ $6\sqrt{14}$ | Question 2 Simplify $\sqrt{896} + 6\sqrt{14}$ $14\sqrt{14}$ | Question 3 Find the coordinates of the vertex of the graph of $y = x^2 + 12x + 36$ $(-6, 0)$ | Question 4 Find the coordinates of the vertex of the graph of $y = x^2 - 6x$ $(3, -9)$ |
| Question 5 Use the formula $v = u + at$ to find a when $v = -4$, $u = 16$ and $t = 10$ $a = -2$ | Question 6 Use the formula $v^2 = u^2 + 2as$ to find s when $v = 4$, $u = 2$ and $a = 1$ $S = 6$ | Question 7 Expand and simplify $(x + 2)(x + 3)(x + 1)$ $x^3 + 6x^2 + 11x + 6$ | Question 8 Expand and simplify $(x - 1)(x + 2)(x - 3)$ $x^3 - 2x^2 - 5x + 6$ |
| Question 9 Write down the exact value of $\tan 45^\circ$ 1 | Question 10 Write down the exact value of $\sin 30^\circ$ $\frac{1}{2}$ | Question 11 A block has a mass of 480g and a volume of 80 cm^3 . Calculate the density. 6 g/cm^3 | Question 12 A pressure of 10 N/m^2 results from a force of 140 N acting over an area x . Find x 14 m^2 |
| Question 13 If $f(x) = 19 - x$ find the value of $f(0.5)$ 18.5 | Question 14 If $f(x) = 30 - 4x$ find the value of $f(4)$ 14 | Question 15 If the n th term of a sequence is $\frac{3n+2}{7n}$ what is the 7th term? $23/49$ | Question 16 If the n th term of a sequence is $\frac{7n}{9n+5}$ what is the 8th term? $56/77$ |
| Question 17 Work out $8 \times 10^3 \times 8 \times 10^5$ 6.4×10^9 | Question 18 Work out $(1.8 \times 10^8) \div (3 \times 10^3)$ 6×10^4 | Question 19 Solve simultaneously $6x + 6y = 60$ and $4x + 2y = 30$ $x = 5 \quad y = 5$ | Question 20 Solve simultaneously $4x + 6y = 24$ and $2x + 2y = 10$ $x = 3 \quad y = 2$ |



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| Question 1 Simplify $\sqrt{686} + 4\sqrt{14}$ 11 $\sqrt{14}$ | Question 2 Simplify $\sqrt{150} + 4\sqrt{6}$ 9 $\sqrt{6}$ | Question 3 Find the coordinates of the vertex of the graph of $y = x^2 - 6x + 16$ (3 , 7) | Question 4 Find the coordinates of the vertex of the graph of $y = x^2 + 4x + 5$ (-2 , 1) |
| Question 5 Use the formula $v = u + at$ to find a when $v = 50$, $u = 14$ and $t = 12$ $a = 3$ | Question 6 Use the formula $v^2 = u^2 + 2as$ to find v when $u = 10$, $a = -2$ and $s = 24$ $v = 2$ | Question 7 Expand and simplify $(x - 2)(x + 3)(x - 1)$ $x^3 - 7x + 6$ | Question 8 Expand and simplify $(x + 2)(x + 2)(x + 4)$ $x^3 + 8x^2 + 20x + 16$ |
| Question 9 Write down the exact value of $\tan 0^\circ$ 0 | Question 10 Write down the exact value of $\tan 60^\circ$ $\sqrt{3}$ | Question 11 A block has a volume of 8 cm^3 and a density of 90 g/cm^3 . Calculate the mass. 720 g | Question 12 A force of 117 N acts over an area of 13 m^2 . What is the pressure? 9 N/m^2 |
| Question 13 If $f(x) = 20 + 3x^2$ find the value of $f(1)$ 23 | Question 14 If $f(x) = 26 - 4x$ find the value of $f(2)$ 18 | Question 15 If the n th term of a sequence is $\frac{5n}{9n-1}$ what is the 12th term? 60/107 | Question 16 If the n th term of a sequence is $\frac{4n}{7n}$ what is the 9th term? 36/63 |
| Question 17 Work out $8 \times 10^2 \times 6 \times 10^3$ 4.8×10^7 | Question 18 Work out $(1.2 \times 10^7) \div (6 \times 10^5)$ 2×10 | Question 19 Solve simultaneously $5x - 4y = 2$ and $3x - 4y = -2$ $x = 2 \quad y = 2$ | Question 20 Solve simultaneously $x + y = 7$ and $3x - y = 9$ $x = 4 \quad y = 3$ |



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| Question 1 Simplify $\sqrt{250} + 6\sqrt{10}$ $11\sqrt{10}$ | Question 2 Simplify $\sqrt{486} + 5\sqrt{6}$ $14\sqrt{6}$ | Question 3 Find the coordinates of the vertex of the graph of $y = x^2 + 18x + 70$ $(-9, -11)$ | Question 4 Find the coordinates of the vertex of the graph of $y = x^2 - 10x + 30$ $(5, 5)$ |
| Question 5 Use the formula $v = u + at$ to find v when $u = 12$, $a = 0.5$ and $t = 2$ $v = 13$ | Question 6 Use the formula $v^2 = u^2 + 2as$ to find a when $u = 5$, $v = 10$ and $s = 5$ 7.5 | Question 7 Expand and simplify $(x + 1)(x + 2)(x + 2)$ $x^3 + 5x^2 + 8x + 4$ | Question 8 Expand and simplify $(x - 2)(x - 3)(x + 2)$ $x^3 - 3x^2 - 4x + 12$ |
| Question 9 Write down the exact value of $\sin 90^\circ$ 1 | Question 10 Write down the exact value of $\cos 30^\circ$ $\frac{\sqrt{3}}{2}$ | Question 11 A block has a mass of 800g and a density of 100 g/cm ³ . Calculate the volume. 8 cm^3 | Question 12 A pressure of 3 N/m ² results from a force of 30 N acting over an area x . Find x 10 m^2 |
| Question 13 If $f(x) = 22 - x$ find the value of $f(-2)$ 24 | Question 14 If $f(x) = 21 - 2x$ find the value of $f(-4)$ 29 | Question 15 If the n th term of a sequence is $\frac{3n}{12n+1}$ what is the 7th term? $21/85$ | Question 16 If the n th term of a sequence is $\frac{5n}{7n+3}$ what is the 8th term? $40/59$ |
| Question 17 Work out $6 \times 10^2 \times 4 \times 10^2$ 2.4×10^5 | Question 18 Work out $(3.6 \times 10^4) \div (6 \times 10)$ 6×10^2 | Question 19 Solve simultaneously $x + y = 9$ and $4x + 5y = 40$ $x = 5 \quad y = 4$ | Question 20 Solve simultaneously $3x - 4y = -5$ and $4x - 6y = -10$ $x = 5 \quad y = 5$ |



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| Question 1 Simplify $\sqrt{192} + 8\sqrt{3}$ $16\sqrt{3}$ | Question 2 Simplify $\sqrt{72} + 5\sqrt{2}$ $11\sqrt{2}$ | Question 3 Find the coordinates of the vertex of the graph of $y = x^2 + 4x + 12$ $(-2, 8)$ | Question 4 Find the coordinates of the vertex of the graph of $y = x^2 + 2x + 6$ $(-1, 5)$ |
| Question 5 Use the formula $v = u + at$ to find u when $v = -26$, $a = -5$ and $t = 6$ $u = 4$ | Question 6 Use the formula $v^2 = u^2 + 2as$ to find v when $u = 8$, $a = 4$ and $s = 10$ $v = 12$ | Question 7 Expand and simplify $(x + 2)(x + 2)(x + 4)$ $x^3 + 8x^2 + 20x + 16$ | Question 8 Expand and simplify $(x - 2)(x + 3)(x + 4)$ $x^3 + 5x^2 - 2x - 24$ |
| Question 9 Write down the exact value of $\sin 45^\circ$ $\frac{\sqrt{2}}{2}$ | Question 10 Write down the exact value of $\sin 0^\circ$ 0 | Question 11 A block has a mass of 360g and a density of 60 g/cm ³ . Calculate the volume. 6 cm^3 | Question 12 A pressure of 5 N/m ² results from a force of 50 N acting over an area x . Find x 10 m^2 |
| Question 13 If $f(x) = 3x + 7$ find the value of $f(1)$ 10 | Question 14 If $f(x) = 25 + 2x^2$ find the value of $f(-2)$ 33 | Question 15 If the n th term of a sequence is $\frac{3n+1}{2n+1}$ what is the 10th term? $31/21$ | Question 16 If the n th term of a sequence is $\frac{7n-2}{7n}$ what is the 6th term? $40/42$ |
| Question 17 Work out $6 \times 10^4 \times 6 \times 10$ 3.6×10^6 | Question 18 Work out $(1.6 \times 10^9) \div (2 \times 10^3)$ 8×10^5 | Question 19 Solve simultaneously $x + y = 5$ and $2x + 3y = 13$ $x = 2 \quad y = 3$ | Question 20 Solve simultaneously $4x + 5y = 36$ and $4x + 2y = 24$ $x = 4 \quad y = 4$ |



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| Question 1 Simplify $\sqrt{891} + 9\sqrt{11}$ $18\sqrt{11}$ | Question 2 Simplify $\sqrt{48} + 7\sqrt{3}$ $11\sqrt{3}$ | Question 3 Find the coordinates of the vertex of the graph of $y = x^2 + 14x + 45$ $(-7, -4)$ | Question 4 Find the coordinates of the vertex of the graph of $y = x^2 + 12x + 44$ $(-6, 8)$ |
| Question 5 Use the formula $v = u + at$ to find v when $u = 4$, $a = -3$ and $t = 8$ $v = -20$ | Question 6 Use the formula $v^2 = u^2 + 2as$ to find a when $u = 10$, $v = 2$ and $s = 6$ $a = -8$ | Question 7 Expand and simplify $(x + 1)(x + 2)(x - 1)$ $x^3 + 2x^2 - x - 2$ | Question 8 Expand and simplify $(x + 2)(x + 2)(x + 3)$ $x^3 + 7x^2 + 16x + 12$ |
| Question 9 Write down the exact value of $\tan 45^\circ$ 1 | Question 10 Write down the exact value of $\cos 90^\circ$ 0 | Question 11 A block has a mass of 140g and a volume of 70 cm^3 . Calculate the density. 2 g/cm^3 | Question 12 Find the force applied over an area of 14 m^2 that is needed to result in a pressure of 8 N/m^2 112 N |
| Question 13 If $f(x) = 29 - 3x$ find the value of $f(2)$ 23 | Question 14 If $f(x) = 28 - x$ find the value of $f(2)$ 26 | Question 15 If the n th term of a sequence is $\frac{6n}{10n-5}$ what is the 8th term? $48/75$ | Question 16 If the n th term of a sequence is $\frac{n^2}{n+1}$ what is the 6th term? $36/7$ |
| Question 17 Work out $5 \times 10^5 \times 8 \times 10^3$ 4×10^9 | Question 18 Work out $(7.2 \times 10^6) \div (8 \times 10^3)$ 9×10^2 | Question 19 Solve simultaneously $x + y = 2$ and $2x + 3y = 9$ $x = -3 \quad y = 5$ | Question 20 Solve simultaneously $6x - 6y = 18$ and $3x + 2y = 19$ $x = 5 \quad y = 2$ |



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| Question 1 Simplify $\sqrt{1134} + 2\sqrt{14}$ $11\sqrt{14}$ | Question 2 Simplify $\sqrt{112} + 3\sqrt{7}$ $7\sqrt{7}$ | Question 3 Find the coordinates of the vertex of the graph of $y = x^2 + 20x + 96$ $(-10, -4)$ | Question 4 Find the coordinates of the vertex of the graph of $y = x^2 + 6x + 1$ $(-3, -8)$ |
| Question 5 Use the formula $v = u + at$ to find u when $v = 28$, $a = 7$ and $t = 2$ $u = 14$ | Question 6 Use the formula $v^2 = u^2 + 2as$ to find a when $u = 2$, $v = 12$ and $s = 10$ $a = 7$ | Question 7 Expand and simplify $(x + 2)(x + 2)(x + 1)$ $x^3 + 5x^2 + 8x + 4$ | Question 8 Expand and simplify $(x - 2)(x + 3)(x + 1)$ $x^3 + 2x^2 - 5x - 6$ |
| Question 9 Write down the exact value of $\sin 60^\circ$ $\frac{\sqrt{3}}{2}$ | Question 10 Write down the exact value of $\sin 45^\circ$ $\frac{\sqrt{2}}{2}$ | Question 11 A block has a mass of 140g and a density of 70 g/cm ³ . Calculate the volume. 2 cm^3 | Question 12 A force of 63 N acts over an area of 7 m ² . What is the pressure? 9 N/m^2 |
| Question 13 If $f(x) = 28 + 4x^2$ find the value of $f(-5)$ 128 | Question 14 If $f(x) = 27 + 3x^2$ find the value of $f(4)$ 75 | Question 15 If the n th term of a sequence is $\frac{n-1}{n+1}$ what is the 11th term? $10/12$ | Question 16 If the n th term of a sequence is $\frac{n+1}{3n}$ what is the 10th term? $11/30$ |
| Question 17 Work out $7 \times 10^3 \times 3 \times 10^4$ 2.1×10^8 | Question 18 Work out $(8 \times 10^6) \div (4 \times 10^4)$ 2×10^2 | Question 19 Solve simultaneously $x + y = 10$ and $2x + 5y = 35$ $x = 5 \quad y = 5$ | Question 20 Solve simultaneously $4x - 3y = 11$ and $4x + 3y = 29$ $x = 5 \quad y = 3$ |



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| Question 1 Simplify $\sqrt{45} + 6\sqrt{5}$ $9\sqrt{5}$ | Question 2 Simplify $\sqrt{250} + 7\sqrt{10}$ $12\sqrt{10}$ | Question 3 Find the coordinates of the vertex of the graph of $y = x^2 + 6x + 8$ $(-3, -1)$ | Question 4 Find the coordinates of the vertex of the graph of $y = x^2 - 2x + 7$ $(1, 6)$ |
| Question 5 Use the formula $v = u + at$ to find u when $v = 52$, $a = 6$ and $t = 6$ $u = 16$ | Question 6 Use the formula $v^2 = u^2 + 2as$ to find a when $u = 12$, $v = 2$ and $s = 5$ $a = -14$ | Question 7 Expand and simplify $(x + 2)(x + 3)(x + 1)$ $x^3 + 6x^2 + 11x + 6$ | Question 8 Expand and simplify $(x - 2)(x - 3)(x + 4)$ $x^3 - x^2 - 14x + 24$ |
| Question 9 Write down the exact value of $\cos 90^\circ$ 0 | Question 10 Write down the exact value of $\cos 45^\circ$ $\frac{\sqrt{2}}{2}$ | Question 11 A block has a mass of 120g and a density of 30 g/cm^3 . Calculate the volume. 5 cm^3 | Question 12 Find the force applied over an area of 2 m^2 that is needed to result in a pressure of 8 N/m^2 16 N |
| Question 13 If $f(x) = 21 - 3x$ find the value of $f(2)$ 15 | Question 14 If $f(x) = 28 - x$ find the value of $f(-3)$ 31 | Question 15 If the n th term of a sequence is $\frac{2n-1}{n+1}$ what is the 8th term? $15/9$ | Question 16 If the n th term of a sequence is $\frac{n}{n+1}$ what is the 6th term? $6/7$ |
| Question 17 Work out $8 \times 10^3 \times 2 \times 10^2$ 1.6×10^6 | Question 18 Work out $(1.6 \times 10^8) \div (4 \times 10^2)$ 4×10^5 | Question 19 Solve simultaneously $4x - 5y = -7$ and $3x - 2y = 0$ $x = 2 \quad y = 3$ | Question 20 Solve simultaneously $x + y = 6$ and $6x + 2y = 28$ $x = 4 \quad y = 2$ |

