1. Look at this list of numbers.
1, 2, 9, 13, 27, 29

Which of the numbers are:

a. cube numbers

1, 27 (B2) -1ee

b. prime numbers?

2, 13, 29 (B2) -1ee

2. What is the highest common factor of 18 and 24?

(M1) at least 3 factors of 18 and 24 listed

6 (A1)

3. What is the lowest common multiple of 12 and 6?

(M1) at least two multiples of 12 and 6 written

12 (A1)

4. Ms Winters has given £918 to each of her favourite 17 people.
How much in total has she given away?

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  918
   17
 6426   <- (M1) either line correct
 9180
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£15606  (A1)
```

[if grid method used, give M1 if 3 of the 6 boxes are correct]

5. Work out

a. 3920 ÷ 16

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  245   (A1)
16|3928  (M1) a clear attempt to divide using any method. Condone one arithmetical error.
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b. 3 ÷ 8

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  0.375  (A1)
8|3.0⁶0⁴0  (M1) as above
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6. Work out:

a. 10 + −6 = 10 − 6 = 4 (M1) (A1)

b. 8 − −7 = 8 + 7 = 15 (M1) (A1)

c. −2 + 23 = 21 (B1)

d. −4 − −9 = −4 + 9 = 5 (M1) (A1)

7. Work out:

a. −5 × 8 = −40 (B1)

b. −36 ÷ −3 = 12 (B1)

c. 500 ÷ −5 = −100 (B1)

8. Estimate the answer to $\sqrt{27}$. Give your answer to 1 d.p.

$5.1 \leqslant$ [ANS to 1 dp] $\leqslant 5.3$ B2

or

$5 <$ [ANSWER rounded any way] < 6 B1

9. Work out:

a. $5(3 + 4)$

$= 5 \times 7$ M1

$= 35$ A1

b. $(100 - 60)^2$

$= 40^2$ M1

$= 1600$ A1

c. $3^2 \times (\sqrt{49} + 1)$

$= 9 \times 8$ M1

$= 72$ A1

d. $11^2 + (17 - 8)^2$

$= 121 + 81$ M1

$= 202$ A1

10. Write down two numbers whose square is 81.

$+9$ B1

-9 B1

11. Work out:

a. $2 \times 8 + 4^3$

$= 16 + 64$ M1

$= 80$ A1

b. $11 \times \sqrt[3]{27} + 50$

$= 11 \times 3 + 50$ M1

$= 83$ A1

c. $\frac{100}{\sqrt[3]{64}} + 3 \times 15$

$= \frac{100}{4} + 45$ M1

$= 25 + 45$

$= 70$ A1

12. Work out:

a. $2 \times (-4)^2$

$= 2 \times 16$ M1

$= 32$ A1

b. $(-10)^3 \times -5$

$= -1000 \times -5$ M1

$= 5000$ A1

13. Work out $\sqrt[3]{(-27)}$

$= -3$ B1

14. $1296 = 4 \times 9 \times 36$

Use the above fact to work out $\sqrt{1296}$

$\sqrt{1296} = \sqrt{4} \times \sqrt{9} \times \sqrt{36}$ M1

$= 2 \times 3 \times 6$

$= 36$ A1

Accept other methods that make use of the numbers in the given fact

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15. $-216 = -8 \times 27$

Use the above fact to work out $\sqrt[3]{-216}$

$\sqrt[3]{-216} = \sqrt[3]{-8} \times \sqrt[3]{27}$ M1

$= -2 \times 3$

$= -6$ A1

Accept other methods that make use of the numbers in the given fact

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16. Work out:

a. $3 \times (7 + 8)^2$

$= 3 \times 15^2$ M1

$= 3 \times 225$

$= 675$ A1

b. $3^2 \times (7 + 8)$

$= 9 \times 15$ M1

$= 135$ A1

c. $(3^2 \times (7 + 8))^2$

$= (3 \times 15)^2$ M1

$= 45^2$

$= 2025$ A1

If you've finished, check over your work, then try the challenge questions (just for fun!)