Working with algebra: properties & rules

Complete the table with your teacher, or have a go yourself.

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| --- | --- | --- |
| Rule/property | Number examples | Algebra examples |
| Multiplying by 0 always equals 0. |  |  |
| Adding or subtracting 0 does not change the value. |  |  |
| Multiplying or dividing by 1 does not change the value. |  |  |
| The order of addition does not matter. |  |  |
| Expressions can be rearranged to make calculation easier. |  |  |
| Multiplication is repeated addition. |  |  |
| The order of multiplication does not matter. |  |  |
| Division can be represented as a fraction, and vice versa. |  |  |
| Repeated operations with the same number can be grouped. |  |  |
| Multiplying a value by itself gives the square value. |  |  |
| Dividing a value by itself gives 1. |  |  |

Teacher copy

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| Rule/property | Number examples | Algebra examples |
| Multiplying by 0 always equals 0. | $$5×0=0 $$$$0×150=0 $$ | $$x×0=0 $$$$0×q=0 $$ |
| Adding or subtracting 0 does not change the value. | $$7+0=7$$$$7-0=7 $$ | $$x+0=x$$$$b-0=b$$ |
| Multiplying or dividing by 1 does not change the value. | $$6×1=6$$$$6÷1=6$$ | $$x×1=x$$$$y÷1=y$$ |
| The order of addition does not matter. | $$7+2=9 and 2+7=9$$Therefore, $7+2=2+7$ | $$x+y=y+x$$$$h+ 2=2+h$$ |
| Expressions can be rearranged to make calculation easier. | –2 + 9 can be rearranged to 9 – 2The sign ‘–’ belongs to the 2 | $$-x+y=y-x$$$$f-2=-2+f$$ |
| Multiplication is repeated addition. | $$6+6+6=3×6$$$$2+2+2+3+3 =3×2+2×3$$ | $$x+x+x=3×x$$$$x+x+x+y+y=3×x+2×y$$ |
| The order of multiplication does not matter. | $4×5=20$ and $5×4=20$Therefore, $4×5=5×4$ | $x×y=20 and $ $y×x=20$Which is shortened to:$$xy=yx$$$$a×b×c=b×a×c$$$$abc=bac$$ |
| Division can be represented as a fraction, and vice versa. | $$2÷10=\frac{2}{10}$$$$\frac{100}{4}=100÷4$$ | $$x÷2=\frac{x}{2}$$$$\frac{a}{b}=a÷b$$ |
| Repeated operations with the same number can be grouped. | $$2×65+3×65=5×65$$ | $$2x×3x=5x$$ |
| Multiplying a value by itself gives the square value. | $$3×3=3^{2}$$ | $$x×x=x^{2}$$ |
| Dividing a value by itself gives 1. | $$7÷7=1$$ | $$x÷x=\frac{x}{x}=1$$ |

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