

Arithmetic With Positive and Negative Numbers

Addition

| Question | If true | Examples |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Are both numbers positive? | Add them together. | $11 + 25 = 36$ |
| Are both numbers negative? | Remove the negative signs, add the numbers together, and put the negative sign back on. | $(-4) + (-8) = -(4 + 8) = -12$ |
| Is the positive number larger than the negative number? | Rewrite as positive number minus negative number. | $-24 + 48 = 48 - 24 = 24$ $15 + (-12) = 15 - 12 = 3$ |
| Is the positive number smaller than the negative number? | Remove the negative sign, subtract smaller number from larger number, and restore negative sign to answer. | $-15 + 12 = -(15-12) = -3$ |

Subtraction

| Question | If true | Examples |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Are both numbers positive, and the left number larger than the right number? | Subtract right number from left number. | $24 - 12 = 12$ $20 - 1 = 19$ |
| Are both numbers positive, and the left number smaller than the right number? | Subtract left number from right number, and apply a negative to the answer. | $12 - 24 = -(24 - 12) = -12$ $0 - 9 = -(9 - 0) = -9$ |
| Is the right number negative? | Convert the minus sign and negative sign into a plus, and go to Addition. | $-4 - (-5) = -4 + 5 = 1$ $4 - (-7) = 4 + 7 = 11$ |
| Is the left number negative and the right number positive? | Remove the negative sign from the left number, add the left number to the right number, and restore the negative sign to the answer. | $-4 - 12 = -(4 + 12) = -16$ $-9 - 5 = -(9 + 5) = -14$ $-1 - 20 = -(1 + 20) = -21$ |

Multiplication

| Question | If true | Examples |
|-------------------------------------------------|-----------------------------------------------|----------------|
| Are both numbers positive? | Multiply them together. | $6 * 3 = 18$ |
| Are both numbers negative? | Multiply them together; the sign is positive. | $-6 * -3 = 18$ |
| Is one number negative and one number positive? | Multiply them together; the sign is negative. | $-6 * 3 = -18$ |

Division

| Question | If true | Examples |
|-------------------------------------------------|-----------------------------------------------------------|-----------------------------------|
| Are both numbers positive? | Divide left number by right number. The sign is positive. | $256 / 16 = 16$ |
| Are both numbers negative? | Divide left number by right number. The sign is positive. | $-16 / -4 = 4$ |
| Is one number negative and one number positive? | Divide left number by right number. The sign is negative. | $-48 / 12 = -4$ $36 / -6 = -6$ |