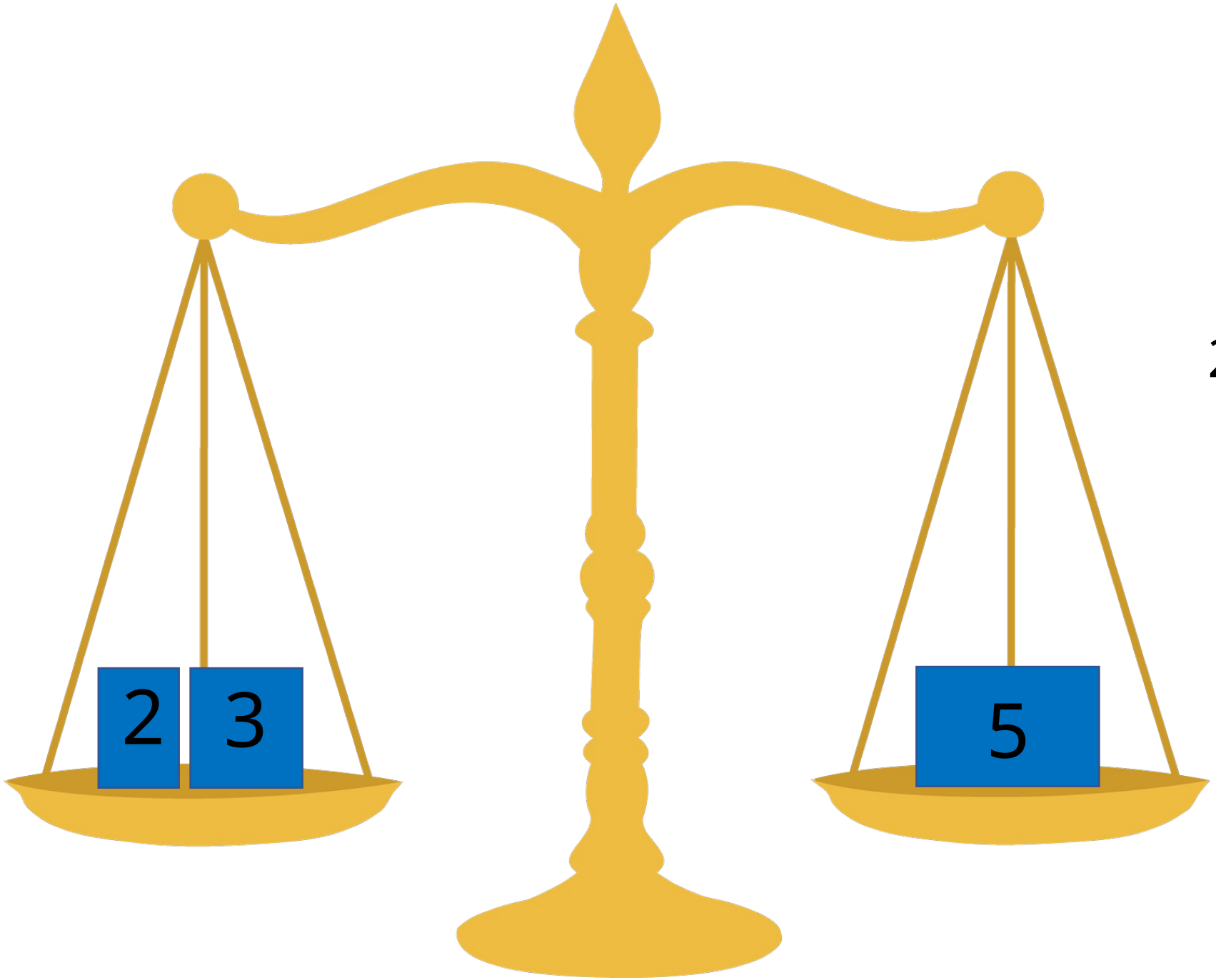
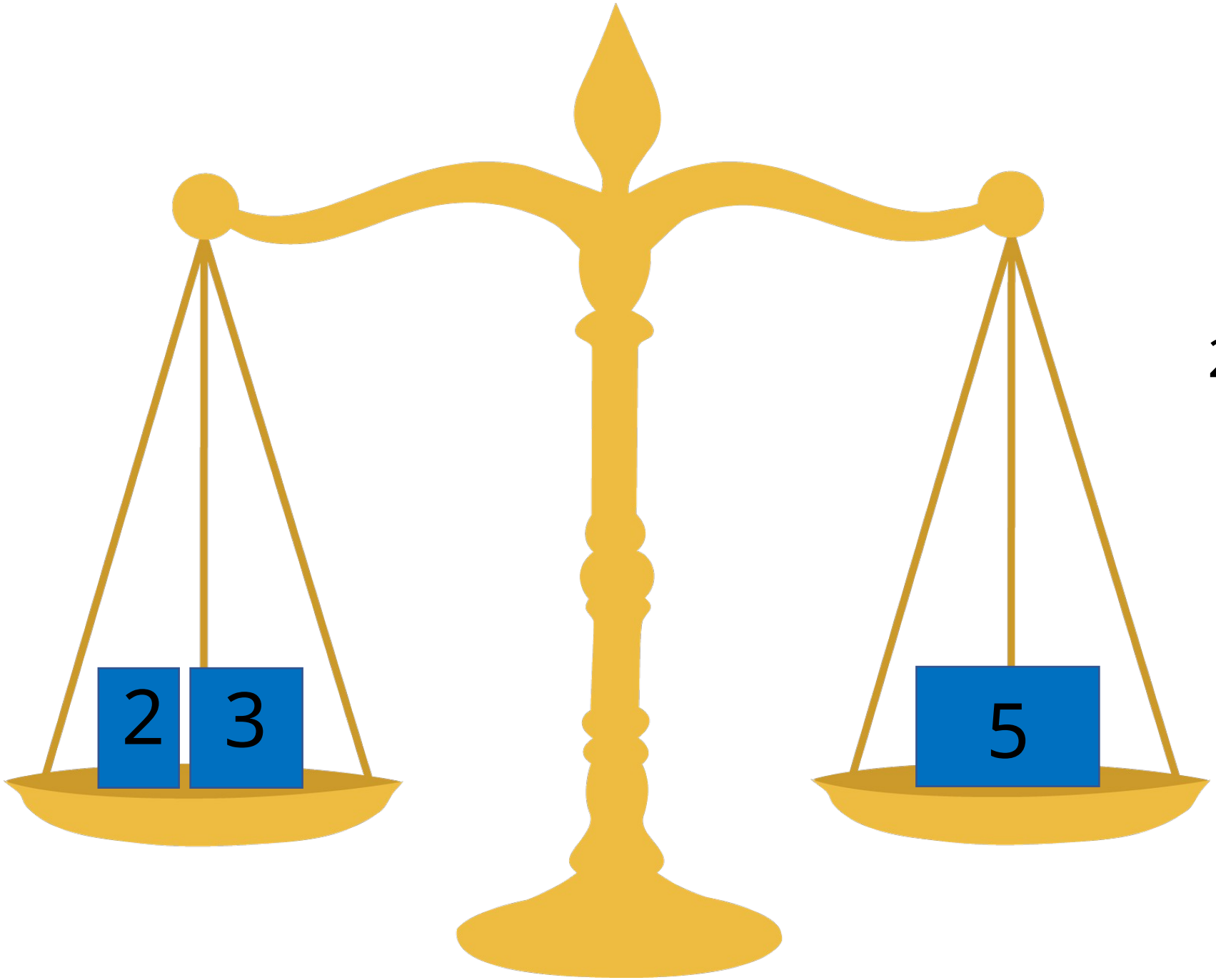
Vergelijkingen

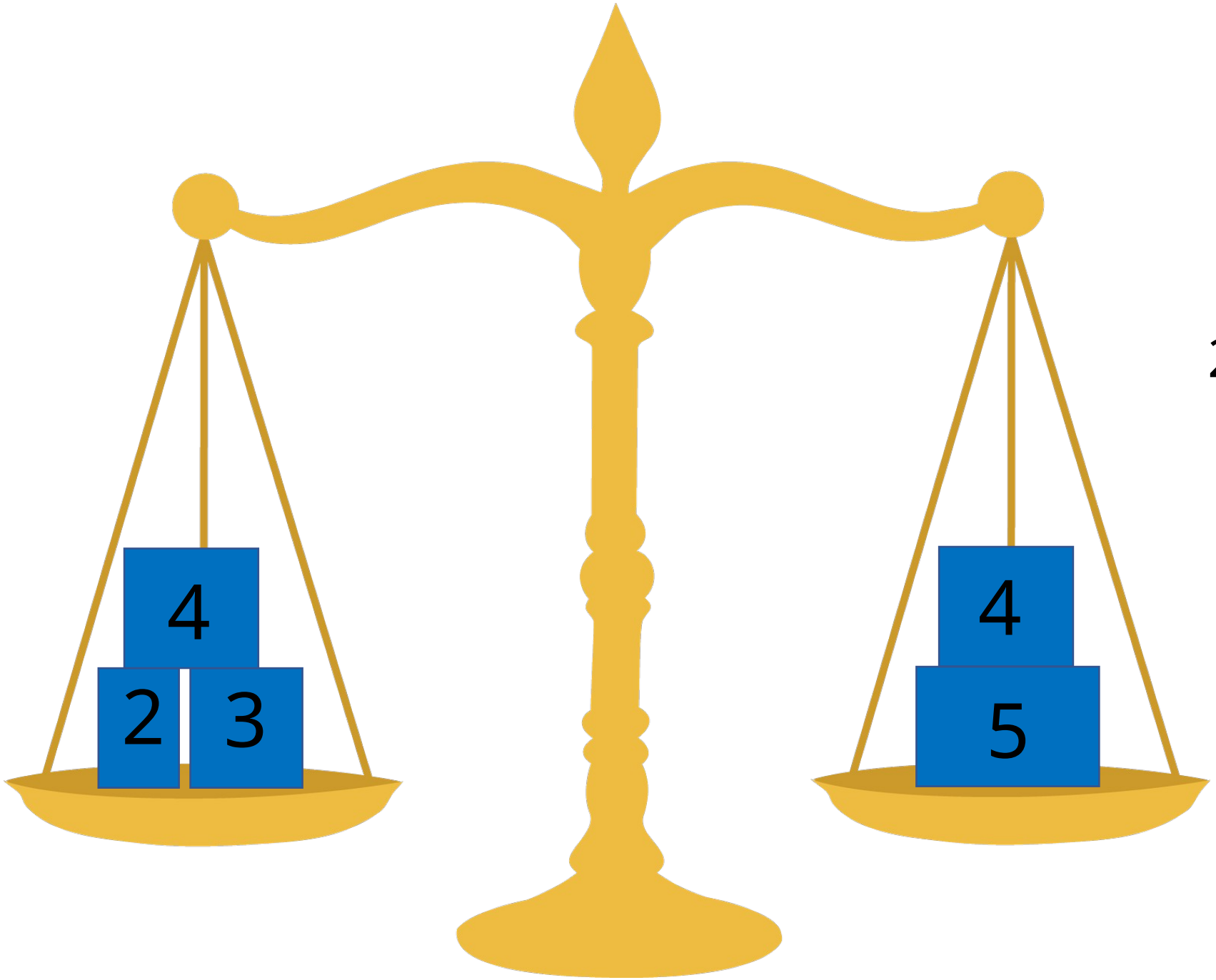
Een vergelijking is een weegschaal met aan beide kanten getallen



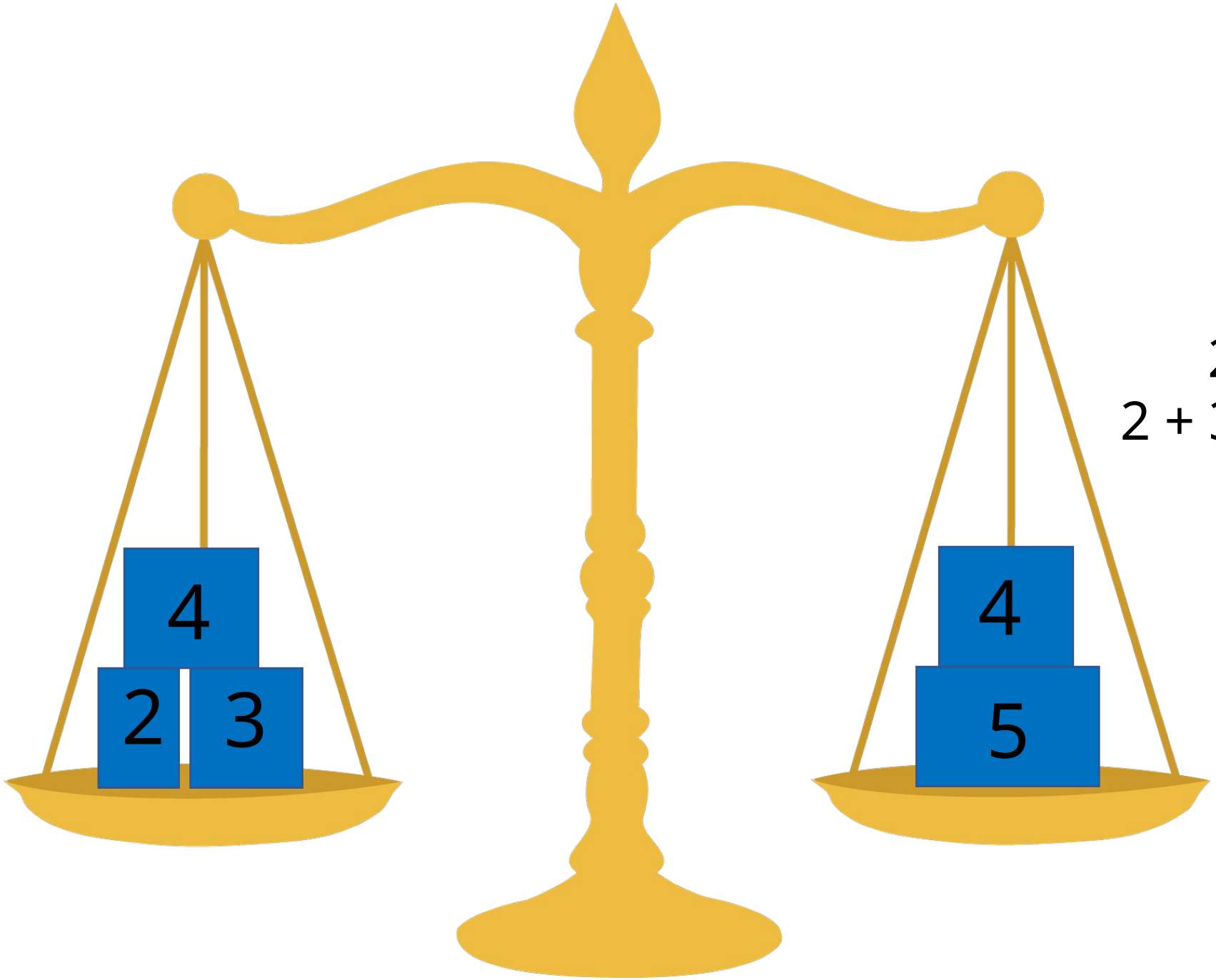
2 + 3 = 5



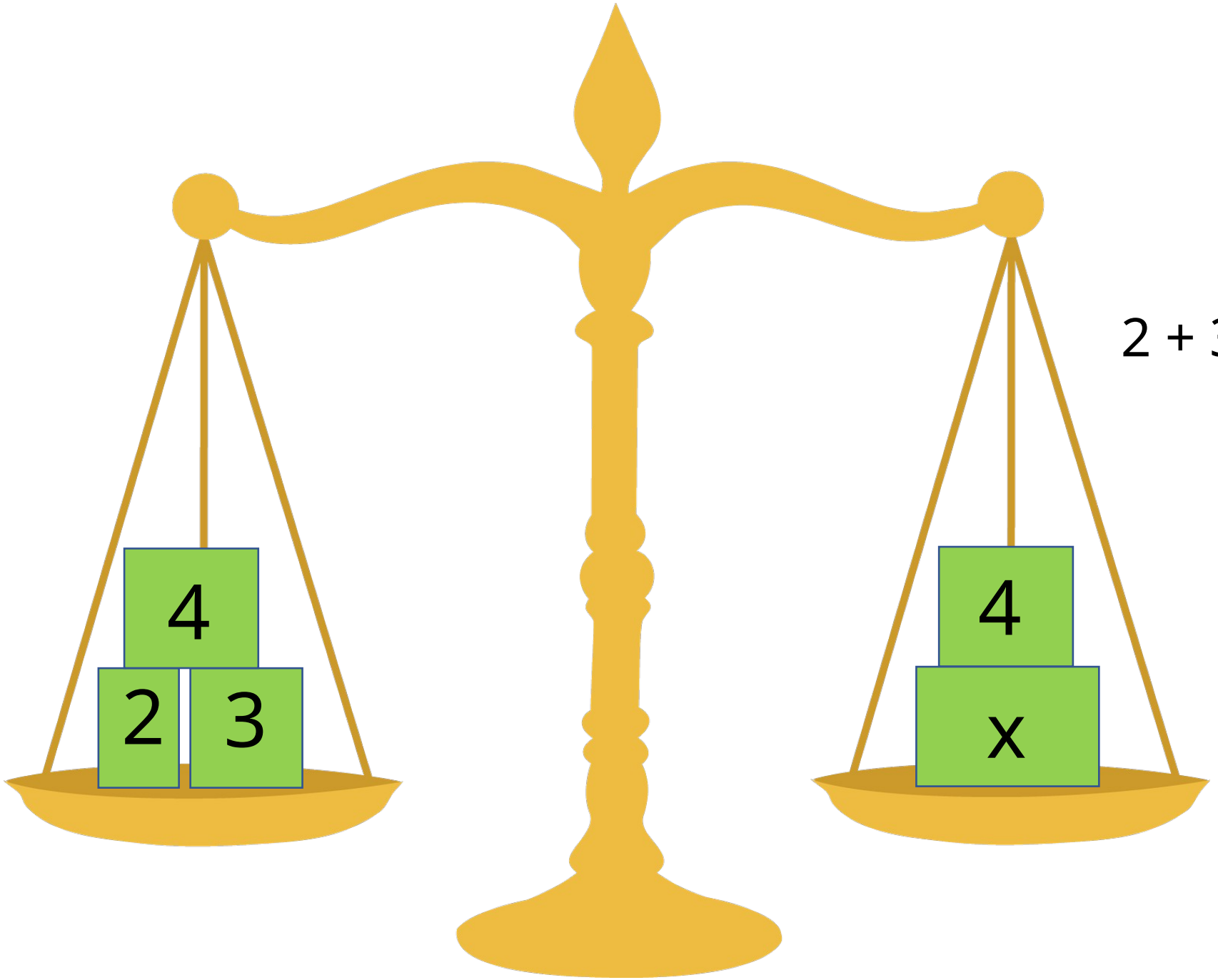
$2 + 3 = 5 \quad | \quad + 4$



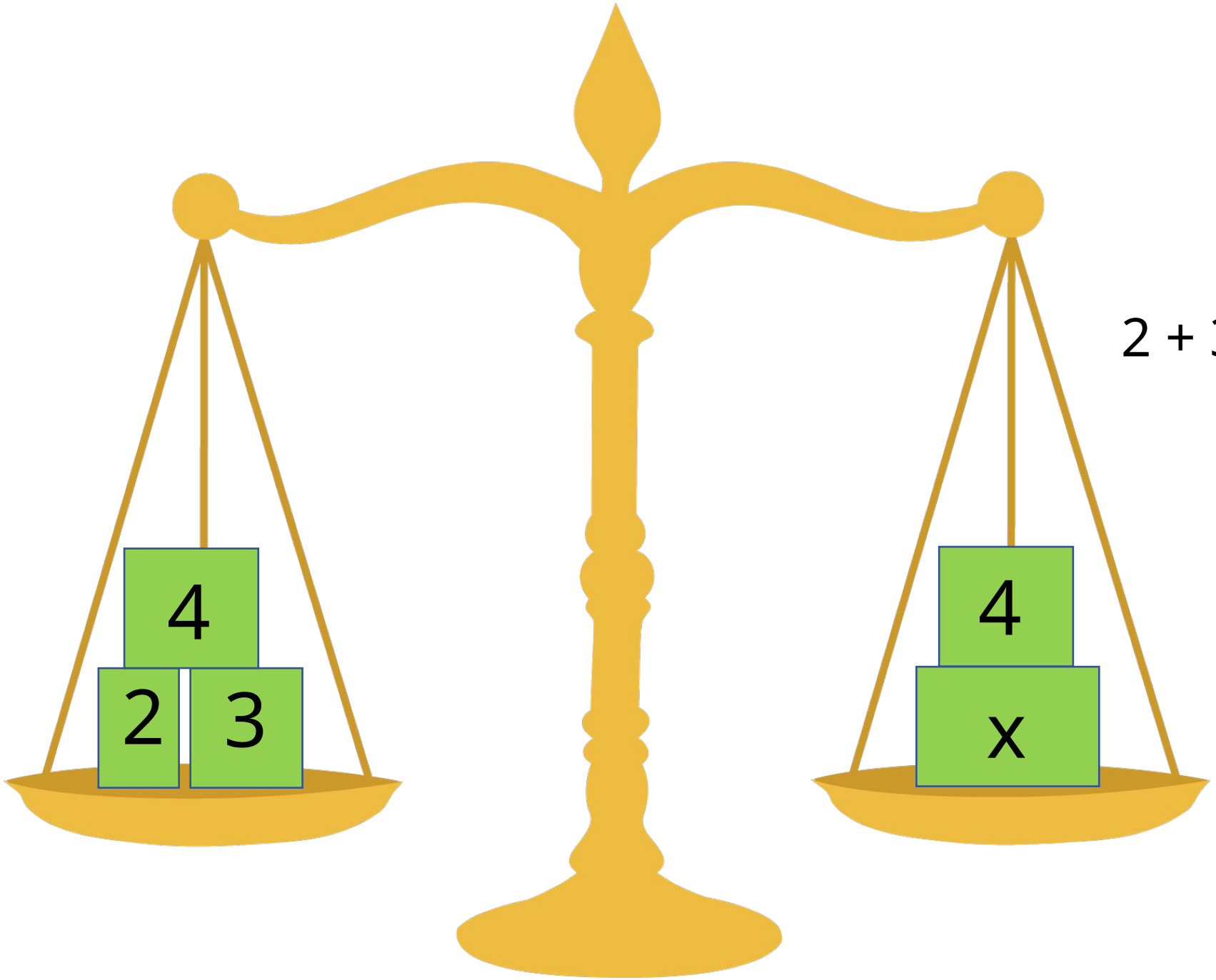
$2 + 3 = 5 \quad | \quad + 4$



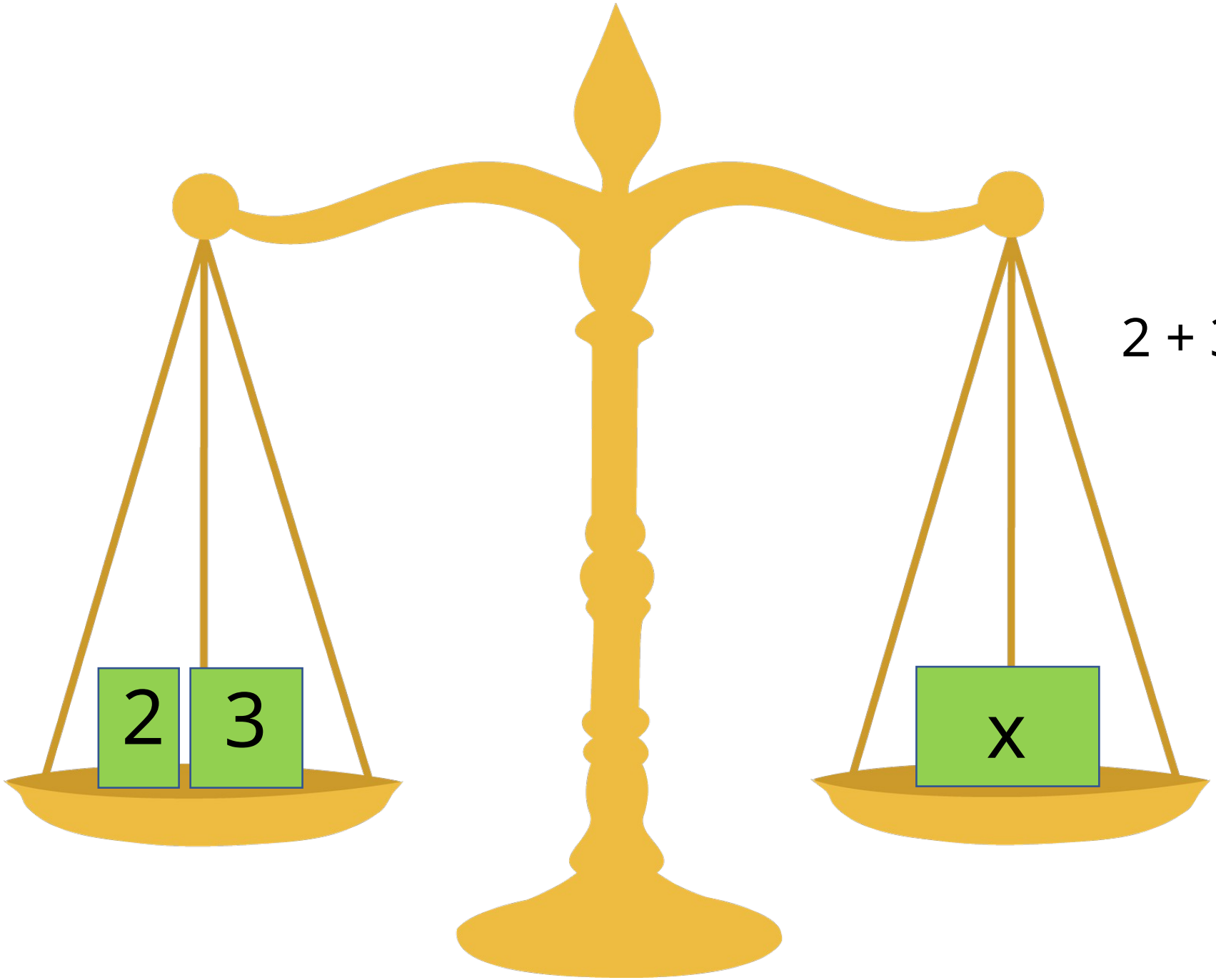
$$2 + 3 = 5 \quad | \quad + 4$$
$$2 + 3 + 4 = 5 + 4$$



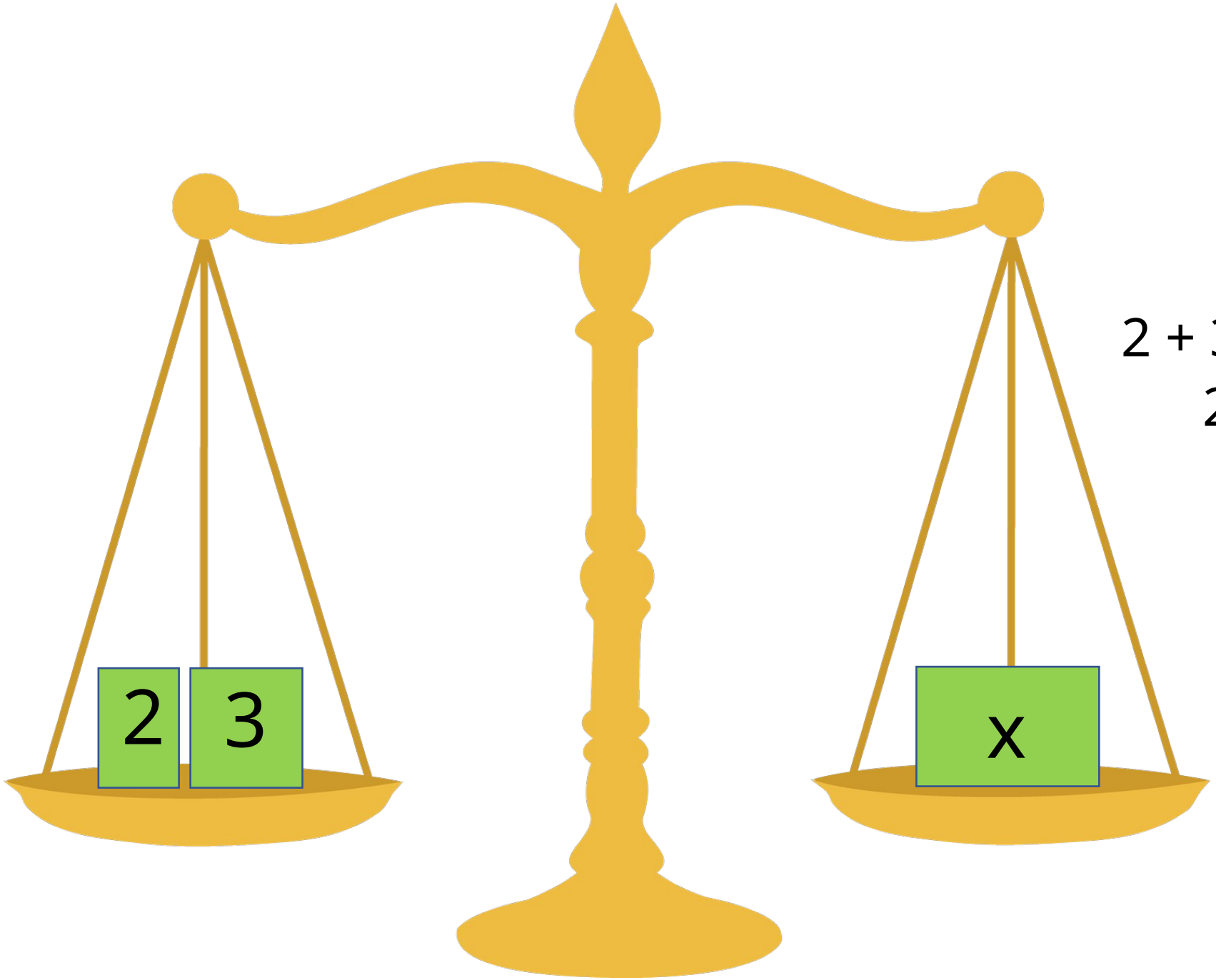
$2 + 3 + 4 = x + 4$



$2 + 3 + 4 = x + 4 \quad | \quad + -4$

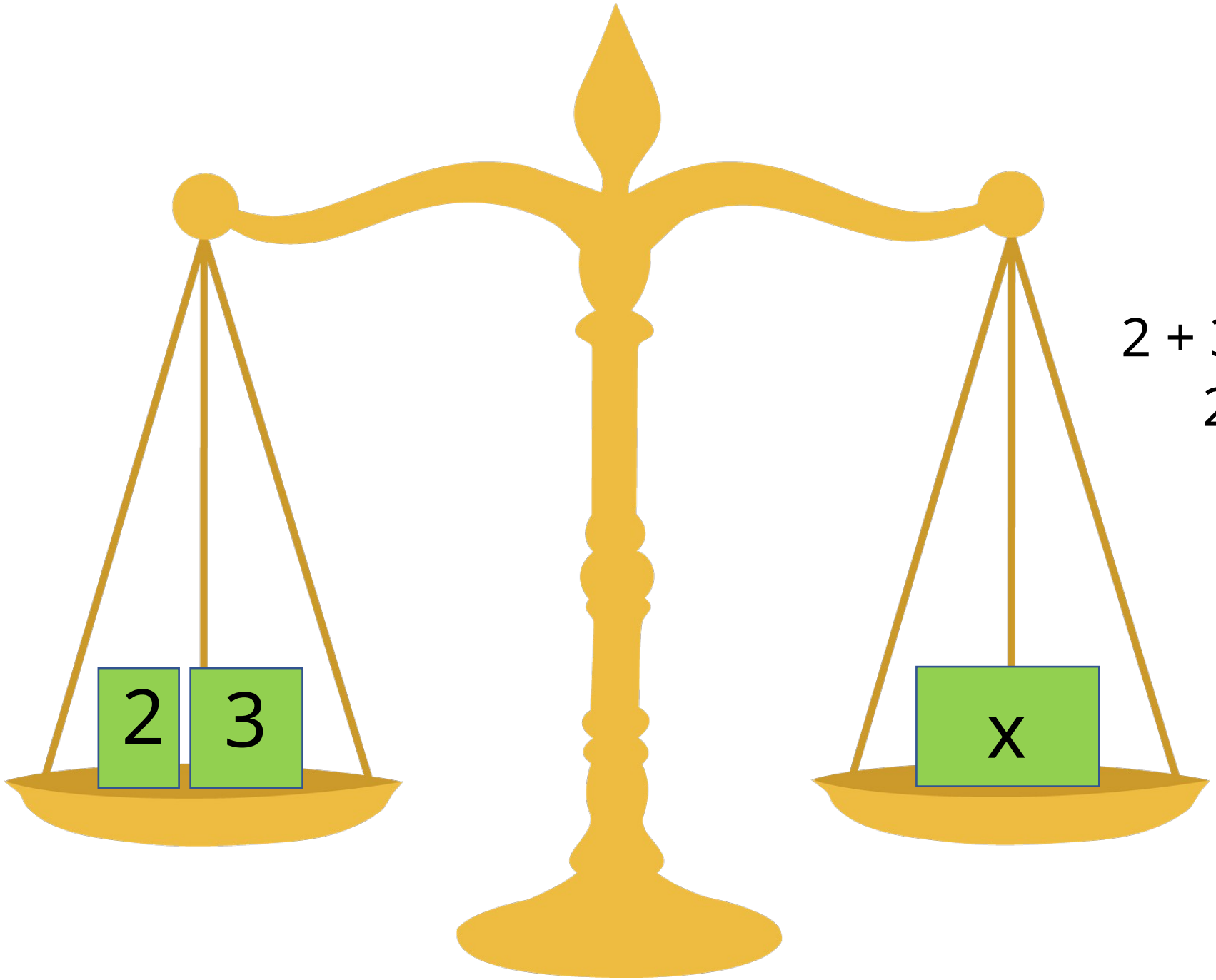


$2 + 3 + 4 = x + 4 \quad | \quad + -4$



$$2 + 3 + 4 = x + 4 \quad | \quad + -4$$

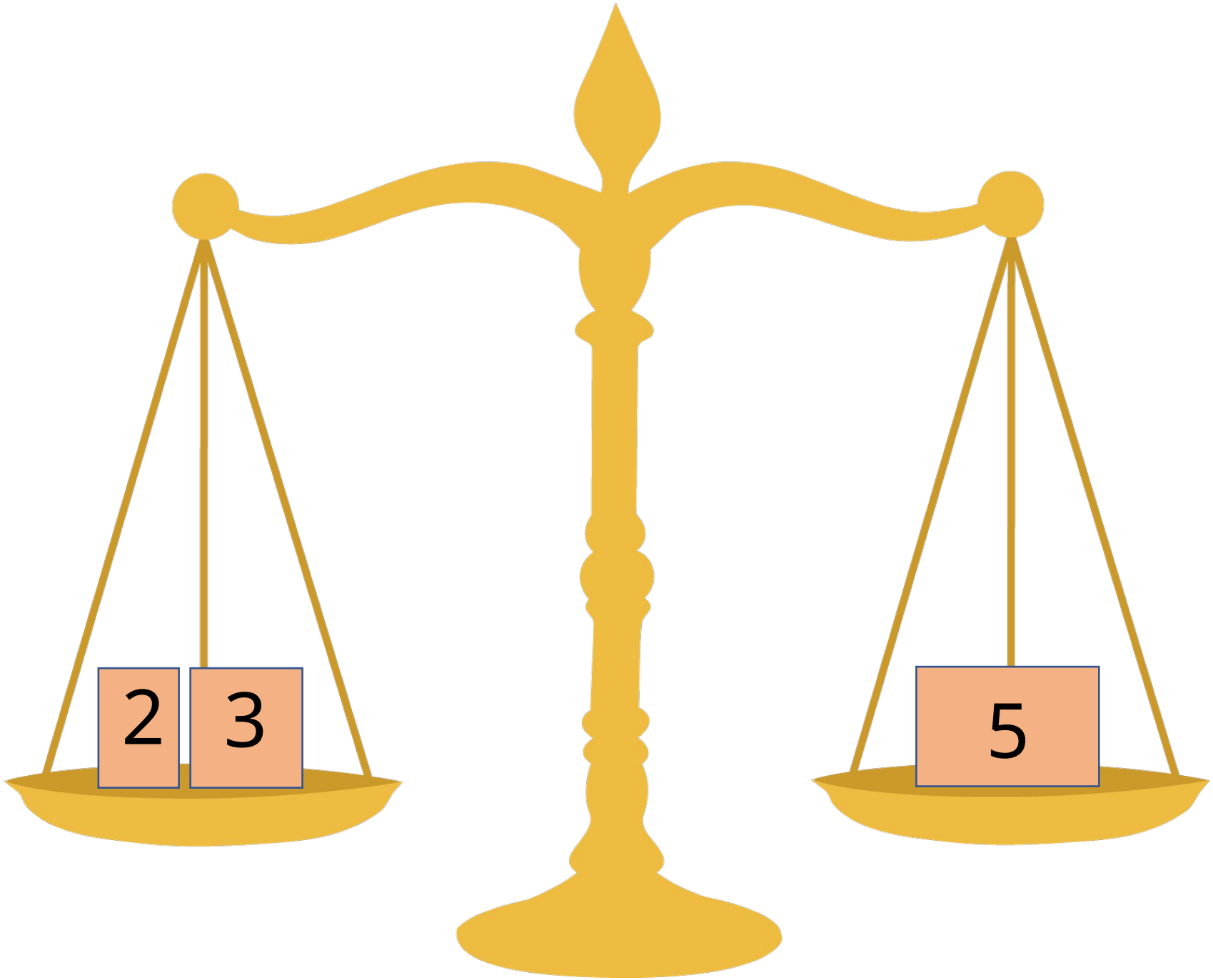
$$2 + 3 = x$$



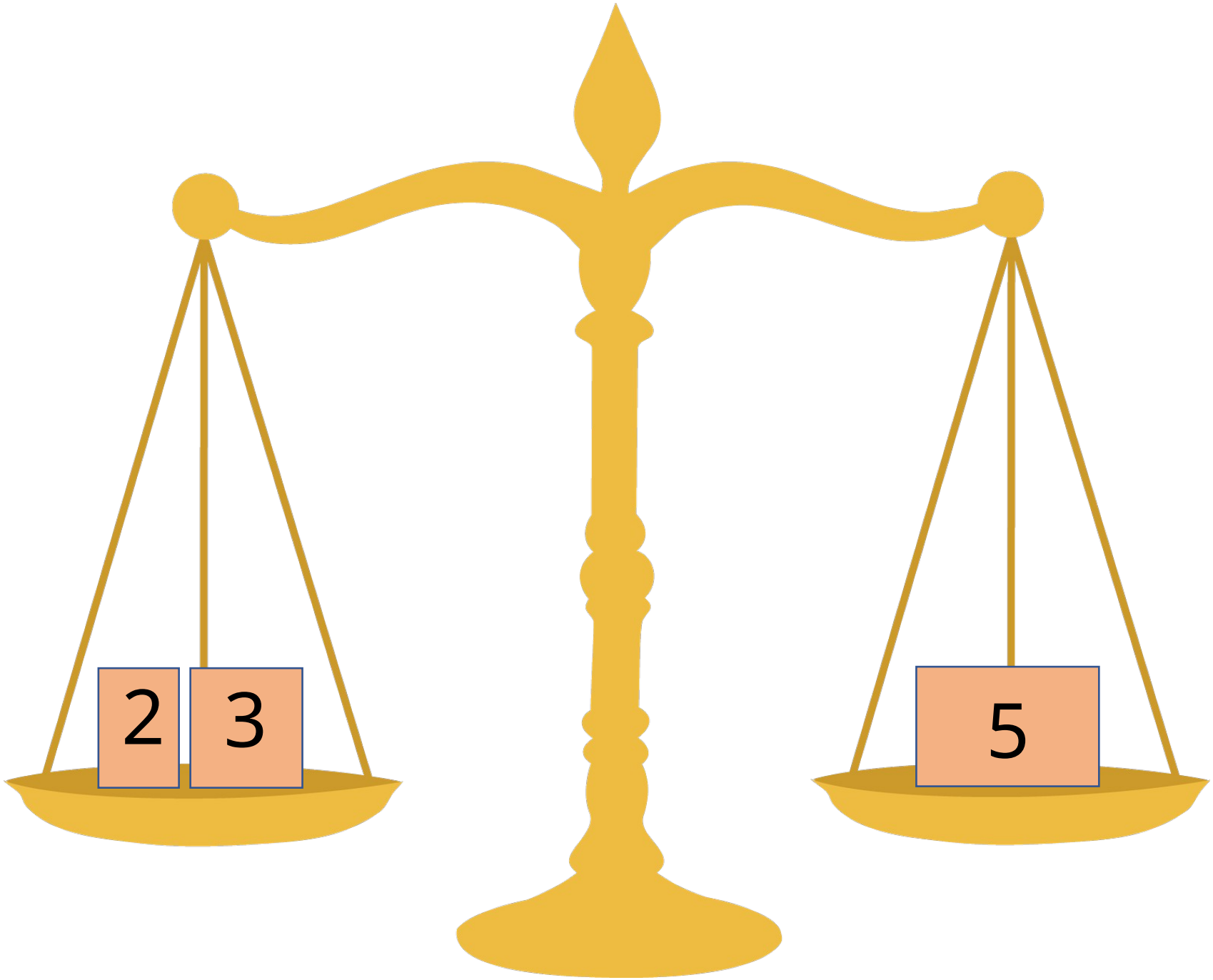
$$2 + 3 + 4 = x + 4 \quad | \quad + -4$$

$$2 + 3 = x$$

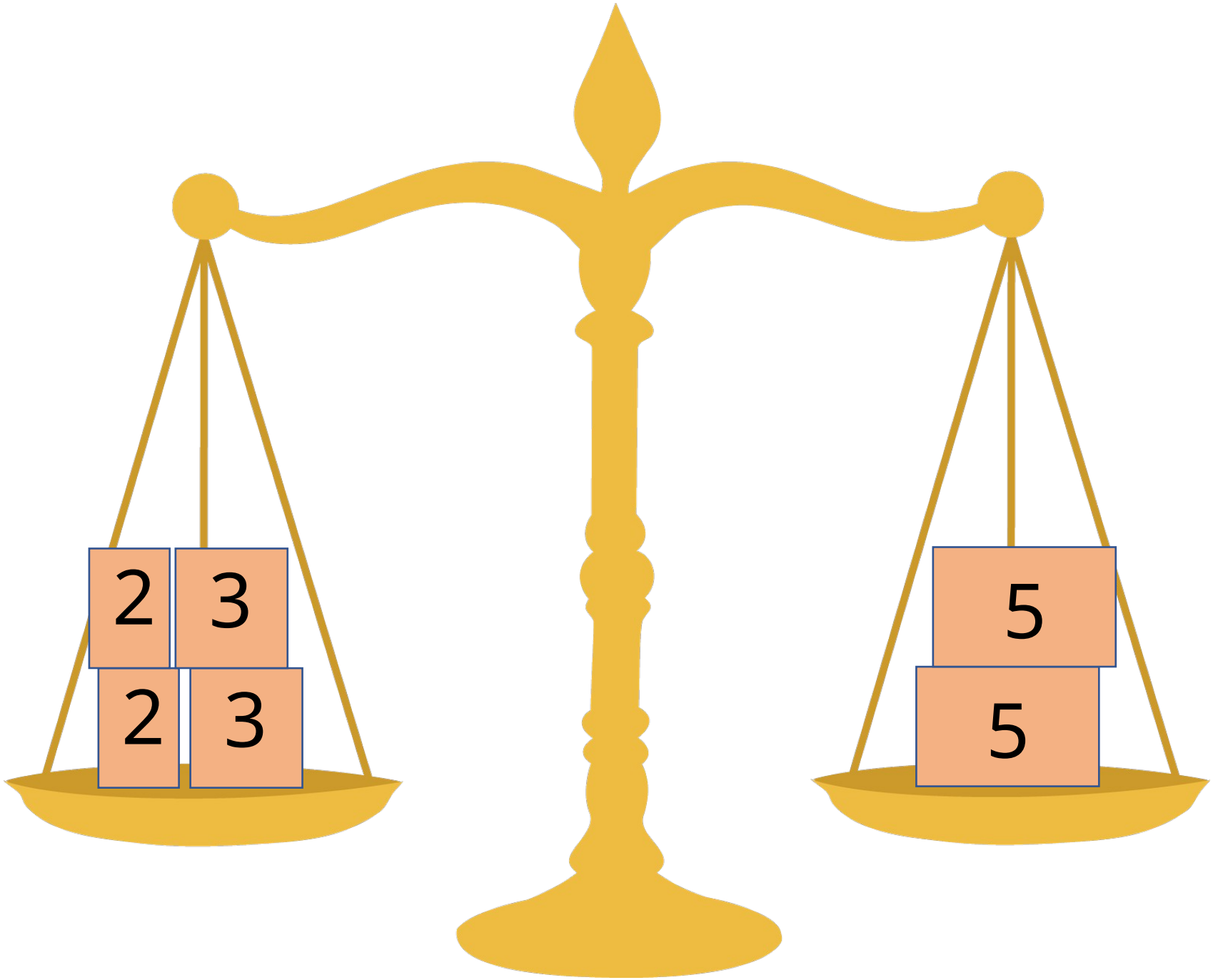
$$x = 5$$



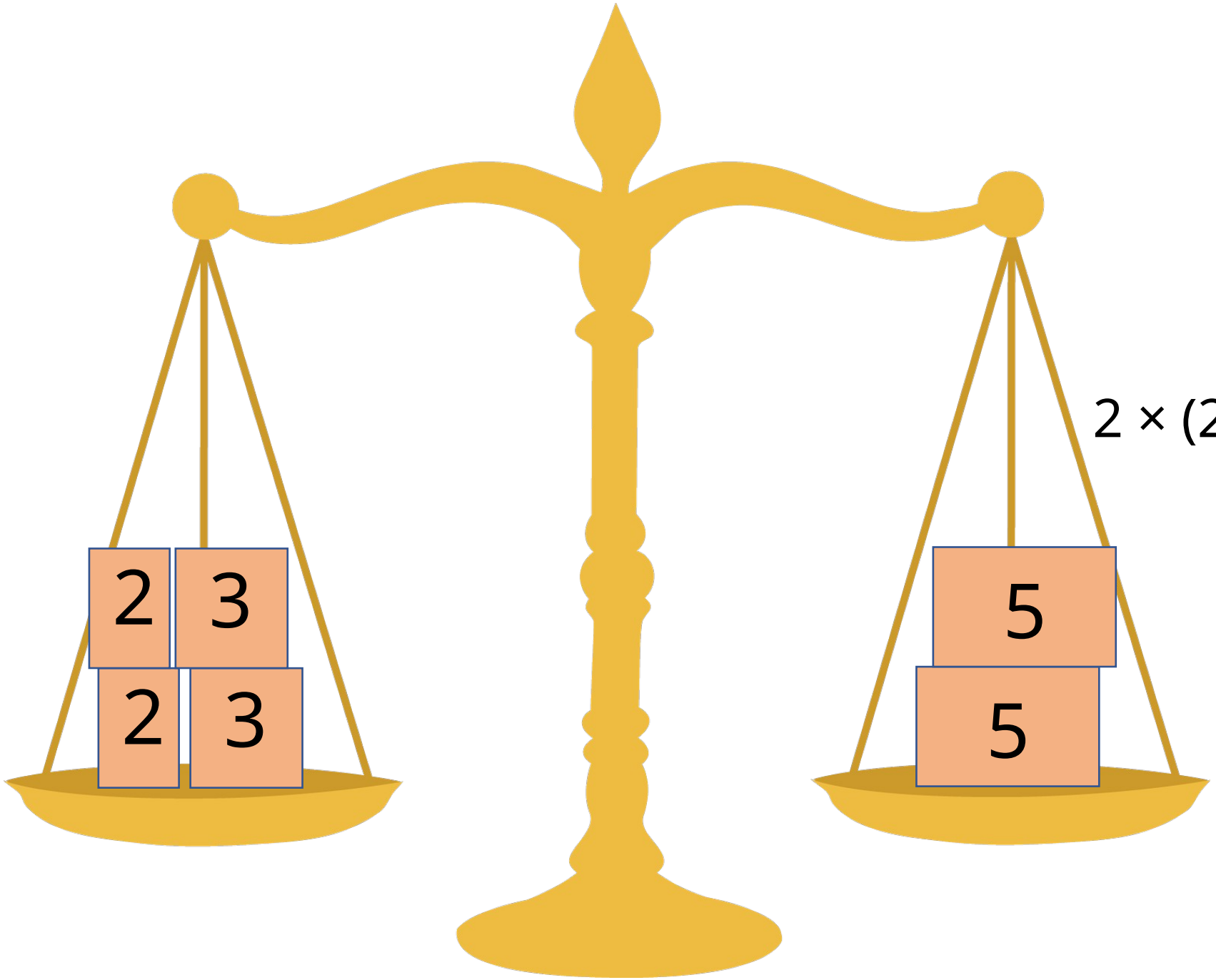
2 + 3 = 5



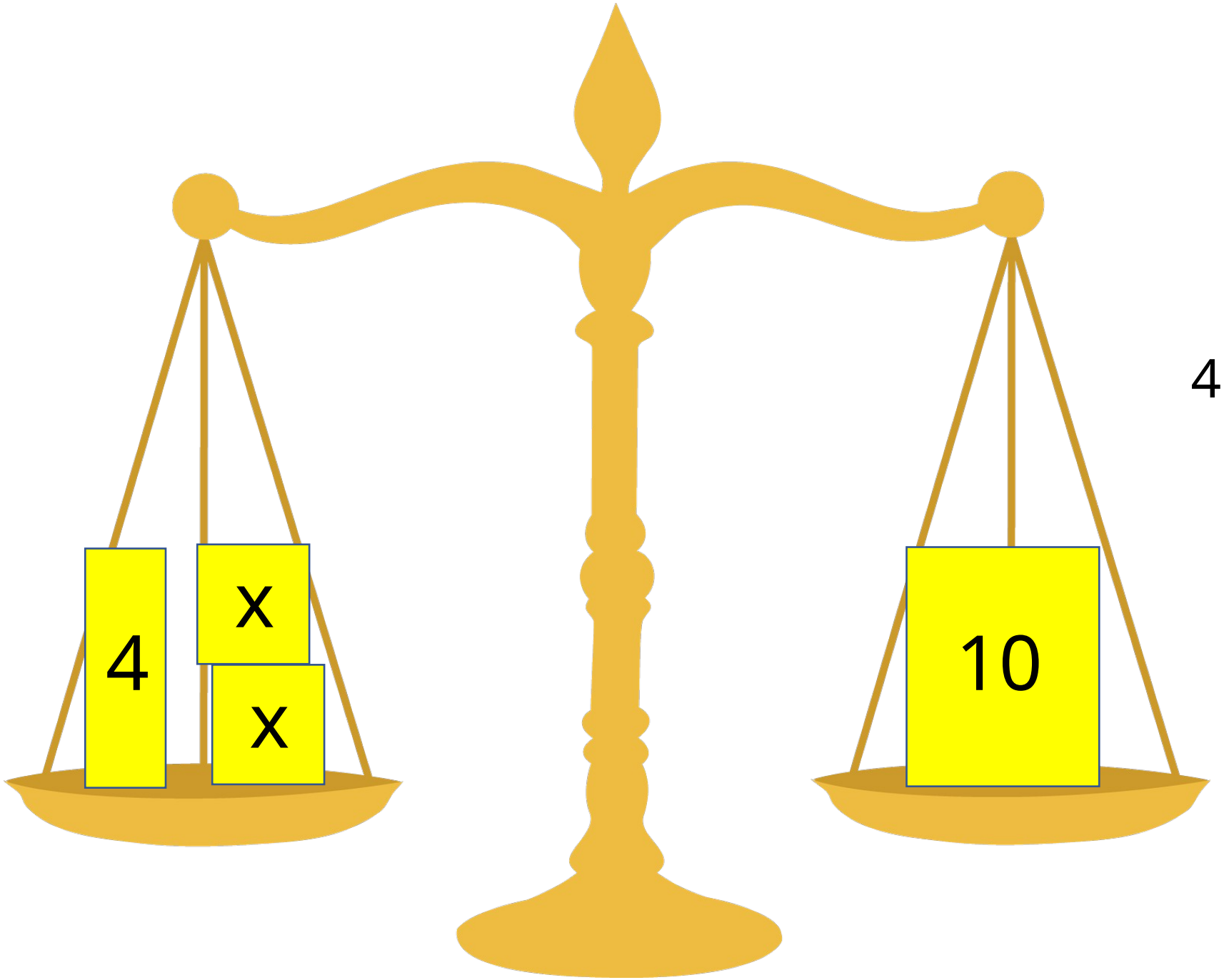
$2 + 3 = 5 \quad | \quad \times 2$



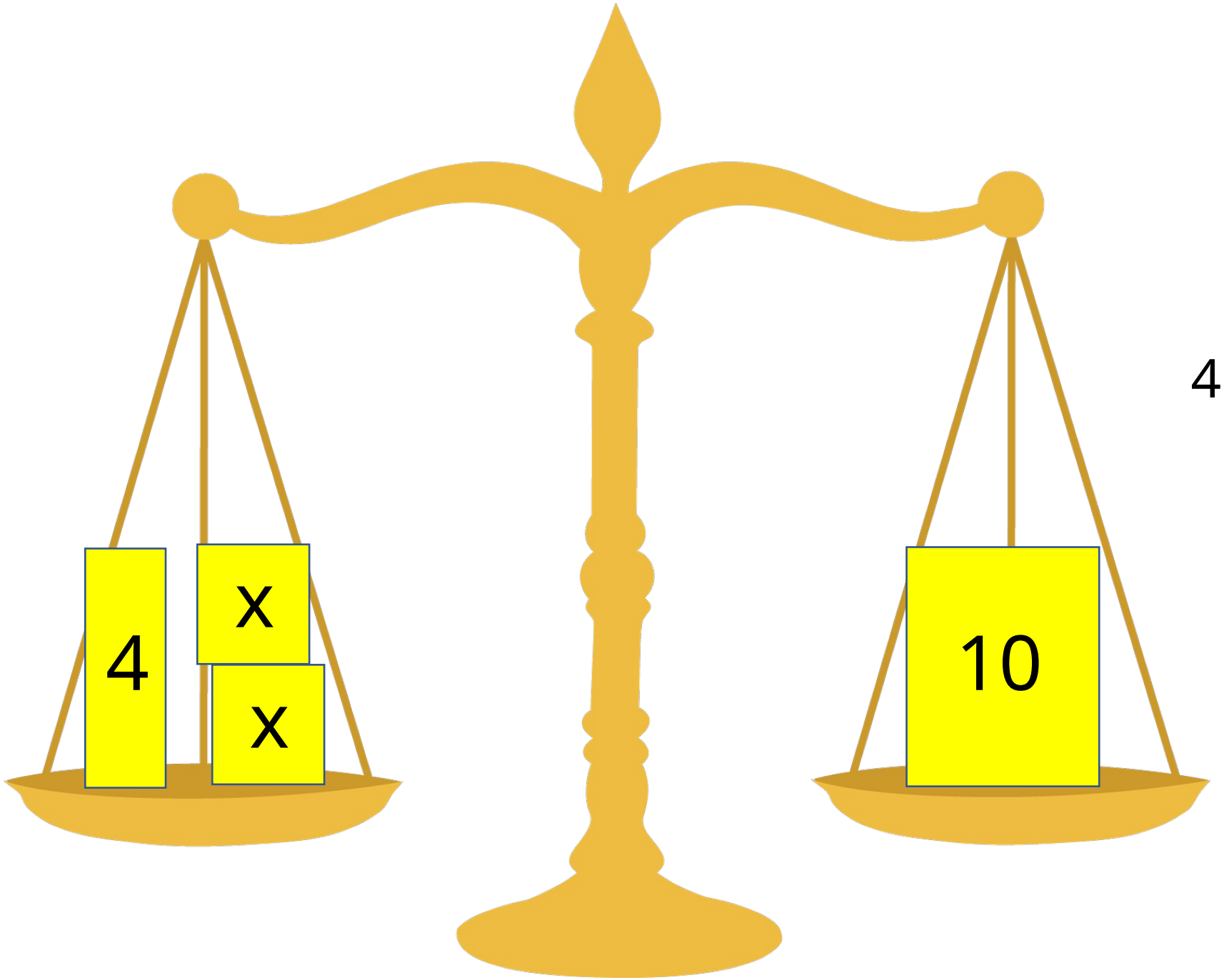
$2 + 3 = 5 \quad | \quad \times 2$



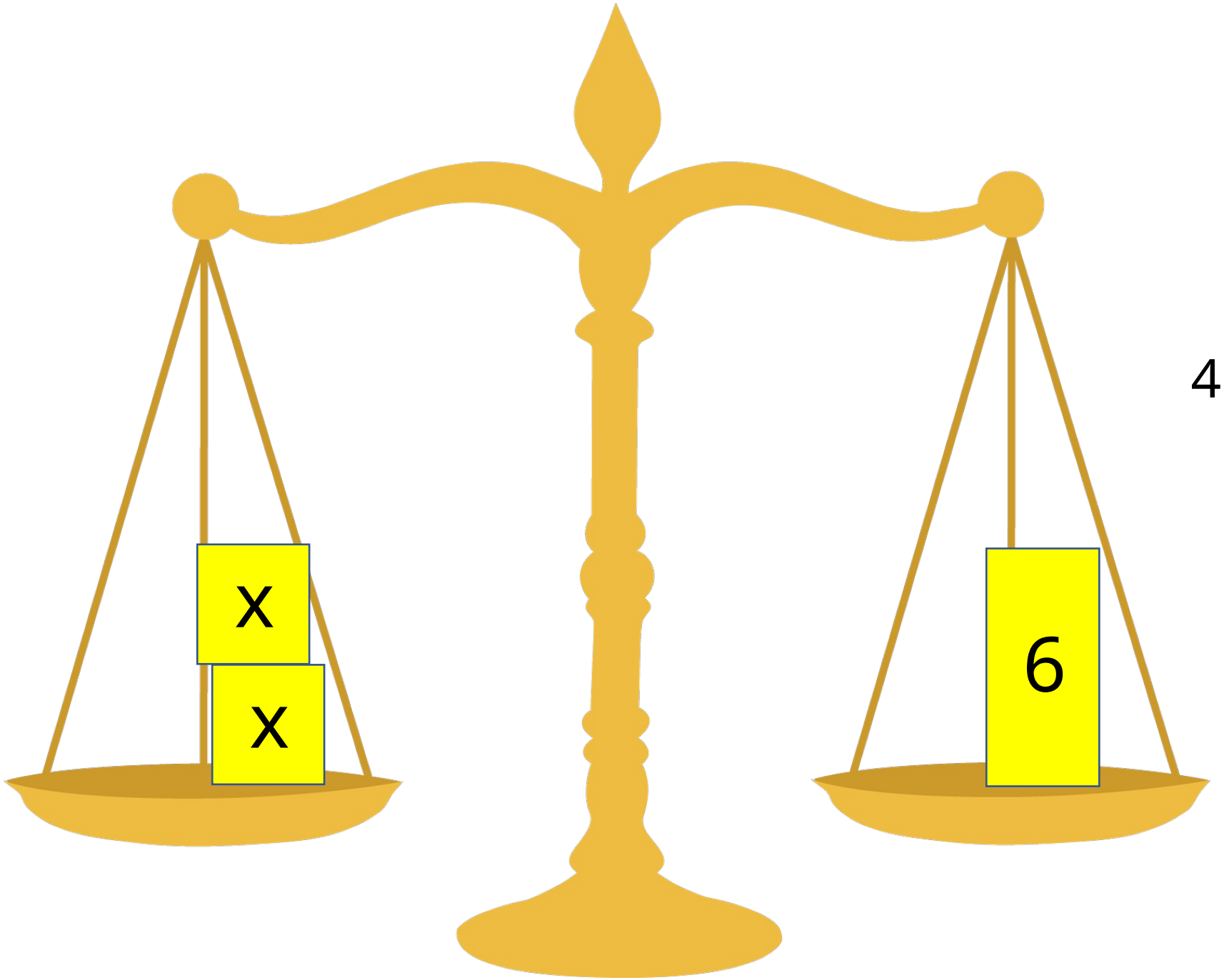
$$2 + 3 = 5 \quad | \times 2$$
$$2 \times (2 + 3) = 2 \times 5$$



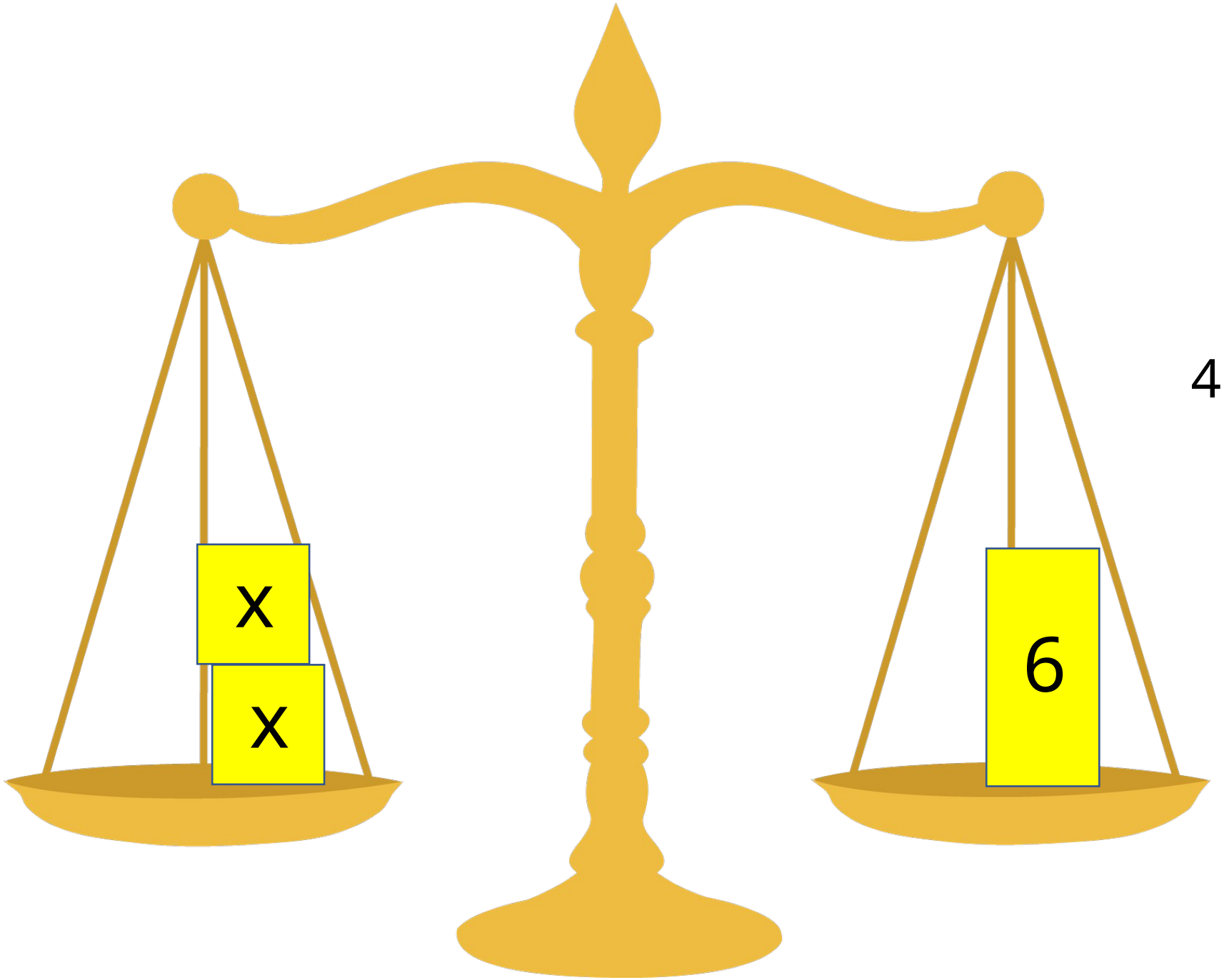
$4 + 2x = 10$



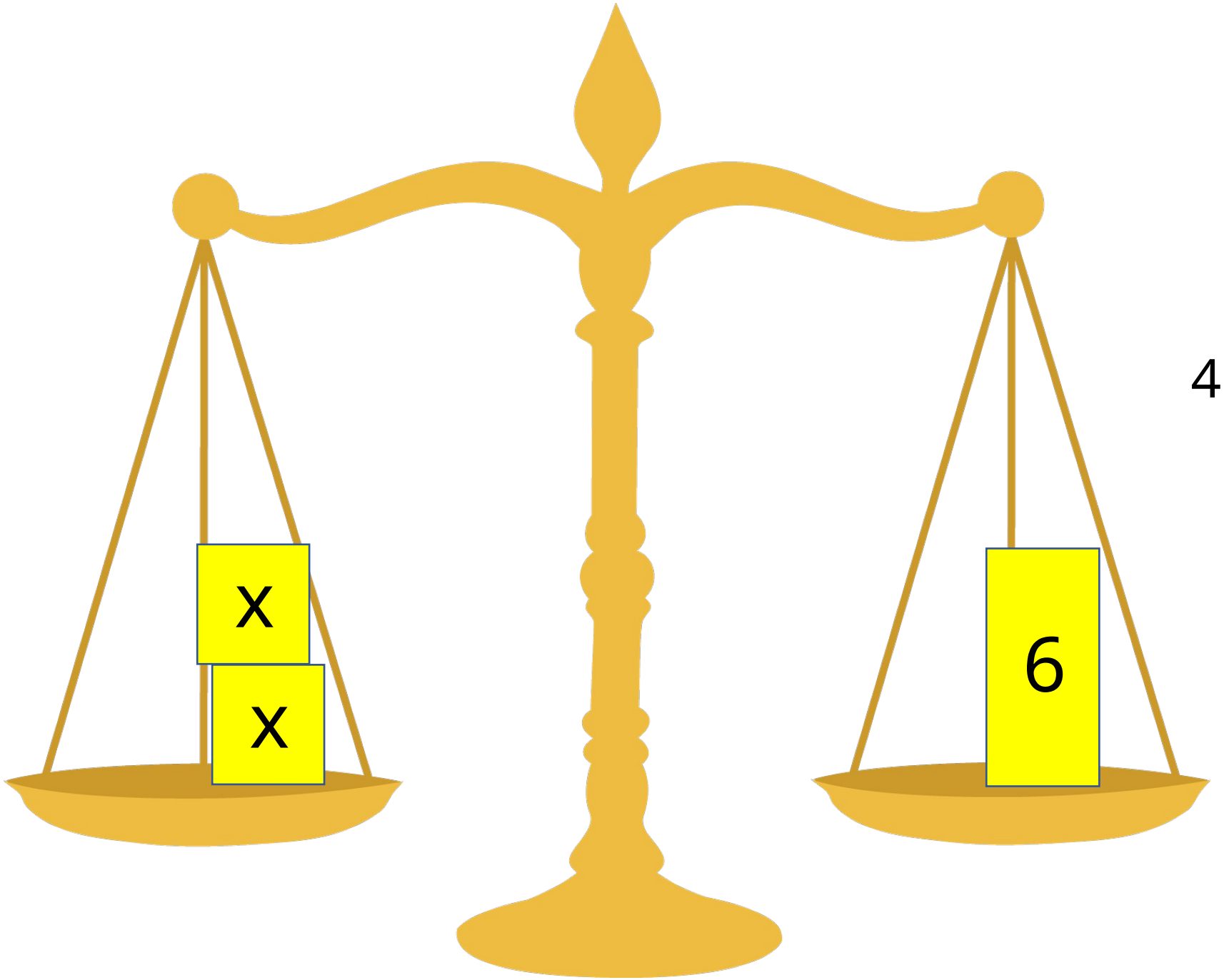
$4 + 2x = 10 \quad | \quad + - 4$



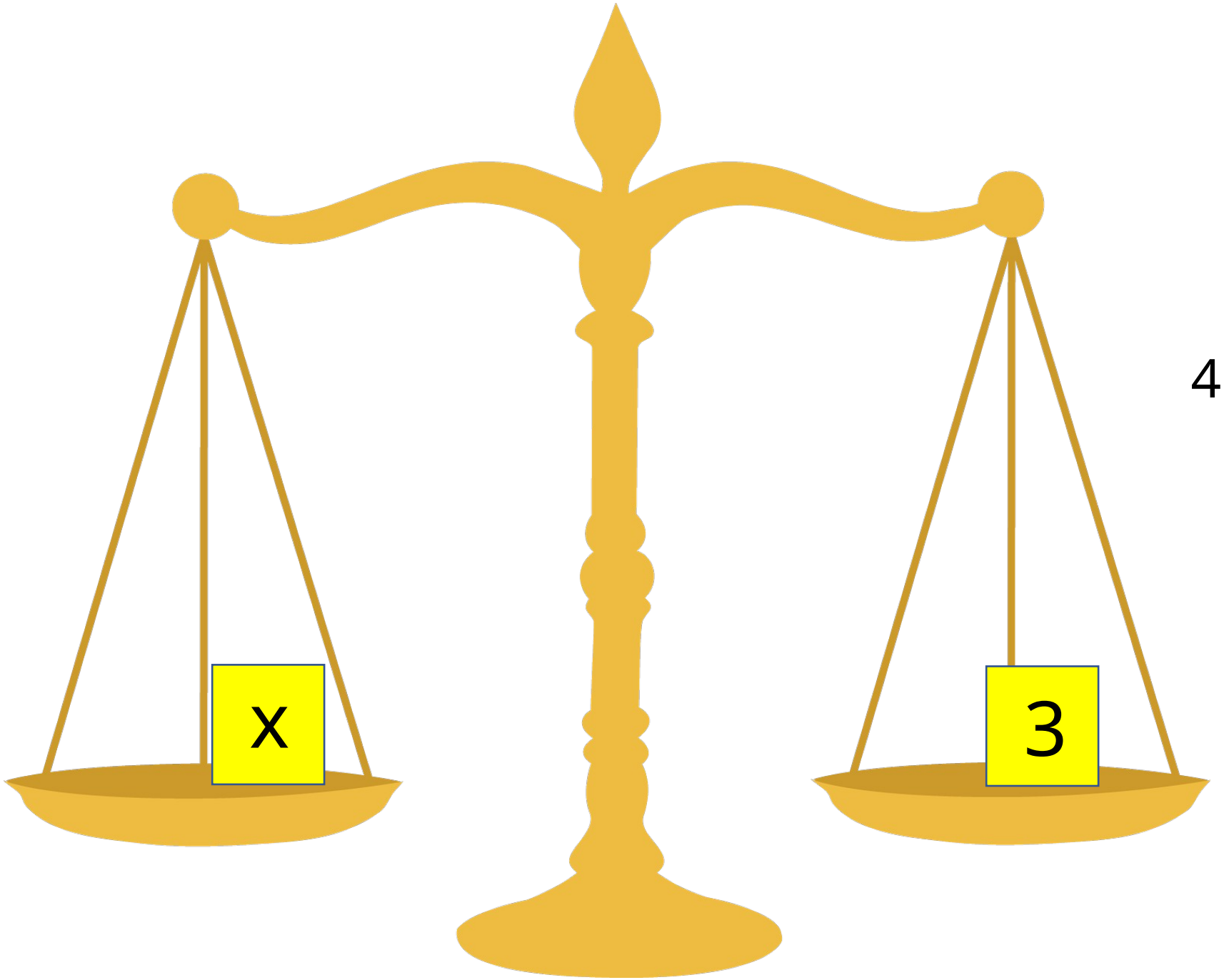
$4 + 2x = 10 \quad | \quad + - 4$



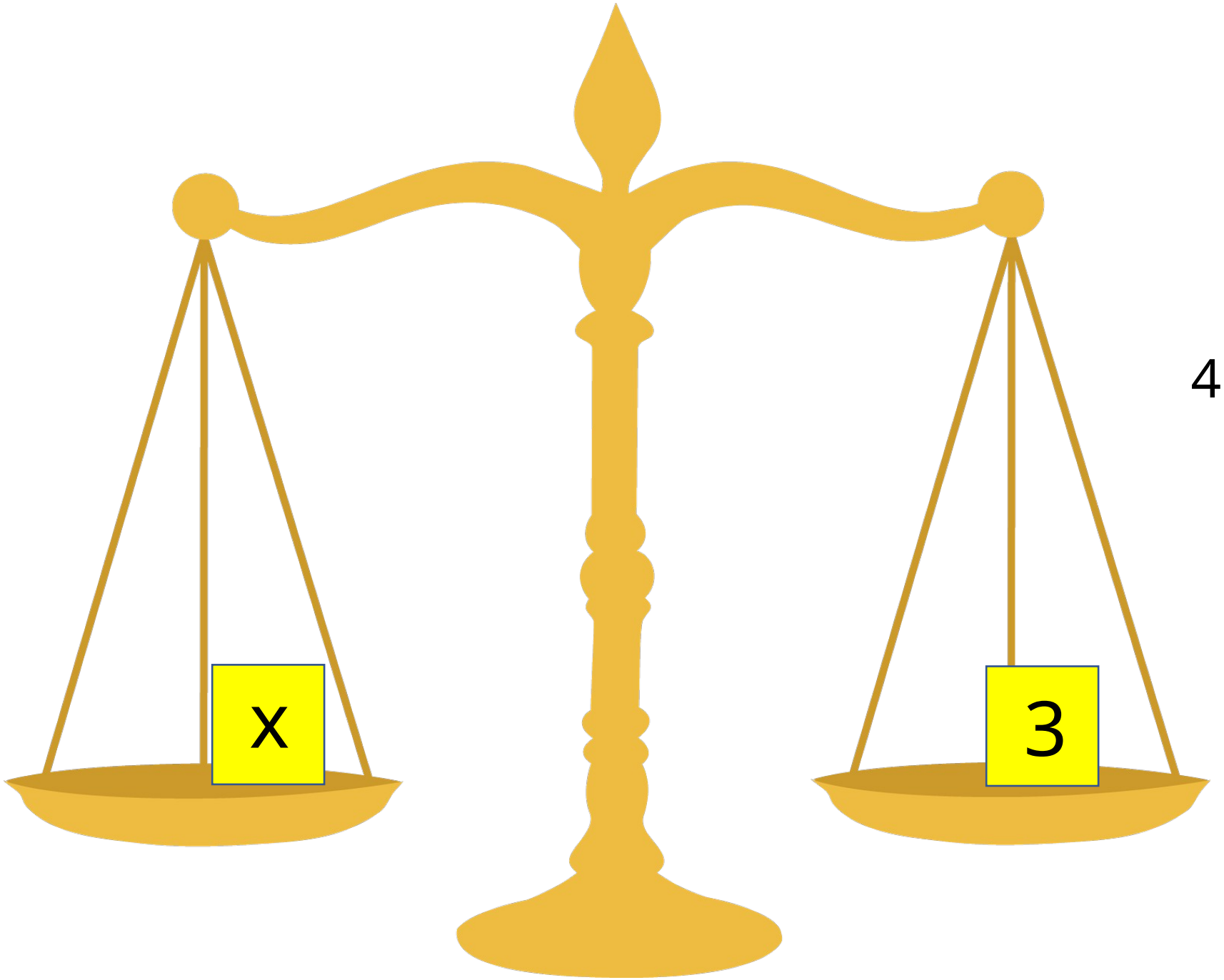
$$4 + 2x = 10 \quad | \quad +\,-\,4$$
$$2x = 6$$



$$4 + 2x = 10 \quad | \quad + - 4$$
$$2x = 6 \quad | \quad \times \tfrac{1}{2}$$



$$4 + 2x = 10 \quad | \quad + -4$$
$$2x = 6 \quad | \quad \times \tfrac{1}{2}$$



$$4 + 2x = 10 \quad | \quad + -4$$
$$2x = 6 \quad | \quad \times \tfrac{1}{2}$$
$$x = 3$$

$$17 = 4x + 5$$

$17 = 4x + 5 \quad | \quad + -5$

$$17 = 4x + 5 \quad | \quad + -5$$
$$12 = 4x$$

$$17 = 4x + 5 \quad | \quad + -5$$
$$12 = 4x \quad | \quad \times 1/4$$

$$17 = 4x + 5 \quad | \quad + -5$$
$$12 = 4x \quad | \quad \times 1/4$$
$$x = 3$$

$17 = 4x + 5 \quad | \quad + -5$

$12 = 4x \quad | \quad \times 1/4$

$x = 3$

$2x + 4 = ½ (½x - 32) + 3x$

$$17 = 4x + 5 \quad | \quad + -5$$
$$12 = 4x \quad | \quad \times 1/4$$
$$x = 3$$

$$2x + 4 = ½ (½x - 32) + 3x \quad | \quad a (b + c) = ab + ac$$

$17 = 4x + 5 \quad | \quad + -5$
$12 = 4x \quad | \quad \times 1/4$
$x = 3$

$2x + 4 = ½ (½x - 32) + 3x \quad | \quad a (b + c) = ab + ac$
$2x + 4 = ¼x - 16 + 3x$

$$17 = 4x + 5 \quad | \quad + -5$$
$$12 = 4x \quad | \quad \times 1/4$$
$$x = 3$$

$$2x + 4 = ½ (½x - 32) + 3x \quad | \quad a (b + c) = ab + ac$$
$$2x + 4 = ¼x - 16 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$$

$$17 = 4x + 5 \quad | \quad + -5$$
$$12 = 4x \quad | \quad \times 1/4$$
$$x = 3$$

$$2x + 4 = ½ (½x - 32) + 3x \quad | \quad a (b + c) = ab + ac$$
$$2x + 4 = ¼x - 16 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$$
$$2x + 4 = 3¼x - 16$$

$$
\begin{aligned}
17 &= 4x + 5 \quad &| \quad &+ -5 \\
12 &= 4x \quad &| \quad &\times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½ (½x - 32) + 3x \quad &| \quad &a (b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x \quad &| \quad &a + b = b + a,\ ac + bc = (a + b) c \\
2x + 4 &= 3¼x - 16 \quad &| \quad &+ -3¼x + -4
\end{aligned}
$$

$$
\begin{aligned}
17 &= 4x + 5 && \mid\ + -5 \\
12 &= 4x && \mid\ \times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½\,(½x - 32) + 3x && \mid\ a\,(b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x && \mid\ a + b = b + a,\ ac + bc = (a + b)\,c \\
2x + 4 &= 3¼x - 16 && \mid\ + -3¼x + -4 \\
-1¼x &= -20
\end{aligned}
$$

$17 = 4x + 5 \quad | \quad + -5$

$12 = 4x \quad | \quad \times 1/4$

$x = 3$

$2x + 4 = ½ (½x - 32) + 3x \quad | \quad a (b + c) = ab + ac$

$2x + 4 = ¼x - 16 + 3x \quad | \quad a + b = b + a, ac + bc = (a + b) c$

$2x + 4 = 3¼x - 16 \quad | \quad + -3¼x + -4$

$-1¼x = -20 \quad | \quad \times -4/5$

$$
\begin{aligned}
17 &= 4x + 5 && \mid\ + -5 \\
12 &= 4x && \mid\ \times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½\,(½x - 32) + 3x && \mid\ a\,(b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x && \mid\ a + b = b + a,\ ac + bc = (a + b)\,c \\
2x + 4 &= 3¼x - 16 && \mid\ + -3¼x + -4 \\
-1¼x &= -20 && \mid\ \times -4/5 \\
x &= 16
\end{aligned}
$$

$$
\begin{aligned}
17 &= 4x + 5 && \mid\ + -5 \\
12 &= 4x && \mid\ \times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½\,(½x - 32) + 3x && \mid\ a\,(b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x && \mid\ a + b = b + a,\ ac + bc = (a + b)\,c \\
2x + 4 &= 3¼x - 16 && \mid\ + -3¼x + -4 \\
-1¼x &= -20 && \mid\ \times -4/5 \\
x &= 16
\end{aligned}
$$

$$2(2x + 10) - x = 7 + 3x$$

$$
\begin{aligned}
17 &= 4x + 5 && \mid\ + -5 \\
12 &= 4x && \mid\ \times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½\,(½x - 32) + 3x && \mid\ a\,(b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x && \mid\ a + b = b + a,\ ac + bc = (a + b)\,c \\
2x + 4 &= 3¼x - 16 && \mid\ + -3¼x + -4 \\
-1¼x &= -20 && \mid\ \times -4/5 \\
x &= 16
\end{aligned}
$$

$$
2(2x + 10) - x = 7 + 3x \quad \mid\ a\,(b + c) = ab + ac
$$

$17 = 4x + 5 \quad | \quad + -5$

$12 = 4x \quad | \quad \times 1/4$

$x = 3$

$2x + 4 = \frac{1}{2}(\frac{1}{2}x - 32) + 3x \quad | \quad a(b + c) = ab + ac$

$2x + 4 = \frac{1}{4}x - 16 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b)c$

$2x + 4 = 3\frac{1}{4}x - 16 \quad | \quad + -3\frac{1}{4}x + -4$

$-1\frac{1}{4}x = -20 \quad | \quad \times -4/5$

$x = 16$

$2(2x + 10) - x = 7 + 3x \quad | \quad a(b + c) = ab + ac$

$4x + 20 - x = 7 + 3x$

$$
\begin{aligned}
17 &= 4x + 5 && | \quad + -5 \\
12 &= 4x && | \quad \times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½ (½x - 32) + 3x && | \quad a (b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x && | \quad a + b = b + a,\ ac + bc = (a + b) c \\
2x + 4 &= 3¼x - 16 && | \quad + -3¼x + -4 \\
-1¼x &= -20 && | \quad \times -4/5 \\
x &= 16
\end{aligned}
$$

$$
\begin{aligned}
2(2x + 10) - x &= 7 + 3x && | \quad a (b + c) = ab + ac \\
4x + 20 - x &= 7 + 3x && | \quad a + b = b + a,\ ac + bc = (a + b) c
\end{aligned}
$$

$$
\begin{aligned}
17 &= 4x + 5 && | \quad + -5 \\
12 &= 4x && | \quad \times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½ (½x - 32) + 3x && | \quad a (b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x && | \quad a + b = b + a,\ ac + bc = (a + b) c \\
2x + 4 &= 3¼x - 16 && | \quad + -3¼x + -4 \\
-1¼x &= -20 && | \quad \times -4/5 \\
x &= 16
\end{aligned}
$$

$$
\begin{aligned}
2(2x + 10) - x &= 7 + 3x && | \quad a (b + c) = ab + ac \\
4x + 20 - x &= 7 + 3x && | \quad a + b = b + a,\ ac + bc = (a + b) c \\
3x + 20 &= 7 + 3x
\end{aligned}
$$

$$
\begin{aligned}
17 &= 4x + 5 && | \quad + -5 \\
12 &= 4x && | \quad \times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½ (½x - 32) + 3x && | \quad a (b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x && | \quad a + b = b + a,\ ac + bc = (a + b) c \\
2x + 4 &= 3¼x - 16 && | \quad + -3¼x + -4 \\
-1¼x &= -20 && | \quad \times -4/5 \\
x &= 16
\end{aligned}
$$

$$
\begin{aligned}
2(2x + 10) - x &= 7 + 3x && | \quad a (b + c) = ab + ac \\
4x + 20 - x &= 7 + 3x && | \quad a + b = b + a,\ ac + bc = (a + b) c \\
3x + 20 &= 7 + 3x && | \quad + -3x + -20
\end{aligned}
$$

$$
\begin{aligned}
17 &= 4x + 5 && \mid && + -5 \\
12 &= 4x && \mid && \times 1/4 \\
x &= 3
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\begin{aligned}
2x + 4 &= ½ (½x - 32) + 3x && \mid && a (b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x && \mid && a + b = b + a,\ ac + bc = (a + b) c \\
2x + 4 &= 3¼x - 16 && \mid && + -3¼x + -4 \\
-1¼x &= -20 && \mid && \times -4/5 \\
x &= 16
\end{aligned}
$$

$$
\begin{aligned}
2(2x + 10) - x &= 7 + 3x && \mid && a (b + c) = ab + ac \\
4x + 20 - x &= 7 + 3x && \mid && a + b = b + a,\ ac + bc = (a + b) c \\
3x + 20 &= 7 + 3x && \mid && + -3x + -20 \\
0 &= -13
\end{aligned}
$$

$$
\begin{aligned}
17 &= 4x + 5 && | && + -5 \\
12 &= 4x && | && \times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½ (½x - 32) + 3x && | && a (b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x && | && a + b = b + a,\ ac + bc = (a + b) c \\
2x + 4 &= 3¼x - 16 && | && + -3¼x + -4 \\
-1¼x &= -20 && | && \times -4/5 \\
x &= 16
\end{aligned}
$$

$$
\begin{aligned}
2(2x + 10) - x &= 7 + 3x && | && a (b + c) = ab + ac \\
4x + 20 - x &= 7 + 3x && | && a + b = b + a,\ ac + bc = (a + b) c \\
3x + 20 &= 7 + 3x && | && + -3x + -20 \\
0 &= -13 && && \text{onwaar voor elke } x
\end{aligned}
$$

$$
\begin{aligned}
17 &= 4x + 5 \quad | \quad + -5 \\
12 &= 4x \quad | \quad \times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½ (½x - 32) + 3x \quad | \quad a (b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b) c \\
2x + 4 &= 3¼x - 16 \quad | \quad + -3¼x + -4 \\
-1¼x &= -20 \quad | \quad \times -4/5 \\
x &= 16
\end{aligned}
$$

$$
\begin{aligned}
2(2x + 10) - x &= 7 + 3x \quad | \quad a (b + c) = ab + ac \\
4x + 20 - x &= 7 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b) c \\
3x + 20 &= 7 + 3x \quad | \quad + -3x + -20 \\
0 &= -13 \quad \text{onwaar voor elke } x
\end{aligned}
$$

$$4 + 3x = x + 2(x + 2)$$

$17 = 4x + 5 \quad | \quad + -5$
$12 = 4x \quad | \quad \times 1/4$
$x = 3$

$2x + 4 = ½ (½x - 32) + 3x \quad | \quad a (b + c) = ab + ac$
$2x + 4 = ¼x - 16 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$
$2x + 4 = 3¼x - 16 \quad | \quad + -3¼x + -4$
$-1¼x = -20 \quad | \quad \times -4/5$
$x = 16$

$2(2x + 10) - x = 7 + 3x \quad | \quad a (b + c) = ab + ac$
$4x + 20 - x = 7 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$
$3x + 20 = 7 + 3x \quad | \quad + -3x + -20$
$0 = -13$ onwaar voor elke x

$4 + 3x = x + 2(x + 2) \quad | \quad a (b + c) = ab + ac$

$17 = 4x + 5 \quad | \quad + -5$
$12 = 4x \quad | \quad \times 1/4$
$x = 3$

$2x + 4 = ½ (½x - 32) + 3x \quad | \quad a (b + c) = ab + ac$
$2x + 4 = ¼x - 16 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$
$2x + 4 = 3¼x - 16 \quad | \quad + -3¼x + -4$
$-1¼x = -20 \quad | \quad \times -4/5$
$x = 16$

$2(2x + 10) - x = 7 + 3x \quad | \quad a (b + c) = ab + ac$
$4x + 20 - x = 7 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$
$3x + 20 = 7 + 3x \quad | \quad + -3x + -20$
$0 = -13$ onwaar voor elke x

$4 + 3x = x + 2(x + 2) \quad | \quad a (b + c) = ab + ac$
$4 + 3x = x + 2x + 4$

$17 = 4x + 5 \quad | \quad + -5$
$12 = 4x \quad | \quad \times 1/4$
$x = 3$

$2x + 4 = ½ (½x - 32) + 3x \quad | \quad a (b + c) = ab + ac$
$2x + 4 = ¼x - 16 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$
$2x + 4 = 3¼x - 16 \quad | \quad + -3¼x + -4$
$-1¼x = -20 \quad | \quad \times -4/5$
$x = 16$

$2(2x + 10) - x = 7 + 3x \quad | \quad a (b + c) = ab + ac$
$4x + 20 - x = 7 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$
$3x + 20 = 7 + 3x \quad | \quad + -3x + -20$
$0 = -13$ onwaar voor elke x

$4 + 3x = x + 2(x + 2) \quad | \quad a (b + c) = ab + ac$
$4 + 3x = x + 2x + 4 \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$

$$
\begin{aligned}
17 &= 4x + 5 && | && + -5 \\
12 &= 4x && | && \times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½ (½x - 32) + 3x && | && a (b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x && | && a + b = b + a,\ ac + bc = (a + b) c \\
2x + 4 &= 3¼x - 16 && | && + -3¼x + -4 \\
-1¼x &= -20 && | && \times -4/5 \\
x &= 16
\end{aligned}
$$

$$
\begin{aligned}
2(2x + 10) - x &= 7 + 3x && | && a (b + c) = ab + ac \\
4x + 20 - x &= 7 + 3x && | && a + b = b + a,\ ac + bc = (a + b) c \\
3x + 20 &= 7 + 3x && | && + -3x + -20 \\
0 &= -13 && && \text{onwaar voor elke } x
\end{aligned}
$$

$$
\begin{aligned}
4 + 3x &= x + 2(x + 2) && | && a (b + c) = ab + ac \\
4 + 3x &= x + 2x + 4 && | && a + b = b + a,\ ac + bc = (a + b) c \\
3x + 4 &= 3x + 4
\end{aligned}
$$

$$
\begin{aligned}
17 &= 4x + 5 && | && + -5 \\
12 &= 4x && | && \times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½ (½x - 32) + 3x && | && a (b + c) = ab + ac \\
2x + 4 &= ¼x - 16 + 3x && | && a + b = b + a,\ ac + bc = (a + b) c \\
2x + 4 &= 3¼x - 16 && | && + -3¼x + -4 \\
-1¼x &= -20 && | && \times -4/5 \\
x &= 16
\end{aligned}
$$

$$
\begin{aligned}
2(2x + 10) - x &= 7 + 3x && | && a (b + c) = ab + ac \\
4x + 20 - x &= 7 + 3x && | && a + b = b + a,\ ac + bc = (a + b) c \\
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\end{aligned}
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2x + 4 &= 3¼x - 16 && | \quad + -3¼x + -4 \\
-1¼x &= -20 && | \quad \times -4/5 \\
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3x + 4 &= 3x + 4 && | \quad + -3x + -4 \\
0 &= 0 && \text{waar voor elke } x
\end{aligned}
$$

$$8x = 7x$$

$17 = 4x + 5 \quad | \quad + -5$
$12 = 4x \quad | \quad \times 1/4$
$x = 3$

$2x + 4 = ½ (½x - 32) + 3x \quad | \quad a (b + c) = ab + ac$
$2x + 4 = ¼x - 16 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$
$2x + 4 = 3¼x - 16 \quad | \quad + -3¼x + -4$
$-1¼x = -20 \quad | \quad \times -4/5$
$x = 16$

$2(2x + 10) - x = 7 + 3x \quad | \quad a (b + c) = ab + ac$
$4x + 20 - x = 7 + 3x \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$
$3x + 20 = 7 + 3x \quad | \quad + -3x + -20$
$0 = -13$ onwaar voor elke x

$4 + 3x = x + 2(x + 2) \quad | \quad a (b + c) = ab + ac$
$4 + 3x = x + 2x + 4 \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$
$3x + 4 = 3x + 4 \quad | \quad + -3x + -4$
$0 = 0$ waar voor elke x

$8x = 7x \quad | \quad + -7x$

$$
\begin{aligned}
17 &= 4x + 5 && | && + -5 \\
12 &= 4x && | && \times 1/4 \\
x &= 3
\end{aligned}
$$

$$
\begin{aligned}
2x + 4 &= ½ (½x - 32) + 3x && | && a (b + c) = ab + ac \\
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2x + 4 &= 3¼x - 16 && | && + -3¼x + -4 \\
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x &= 16
\end{aligned}
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$$
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2(2x + 10) - x &= 7 + 3x && | && a (b + c) = ab + ac \\
4x + 20 - x &= 7 + 3x && | && a + b = b + a,\ ac + bc = (a + b) c \\
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\end{aligned}
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$$
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4 + 3x &= x + 2(x + 2) && | && a (b + c) = ab + ac \\
4 + 3x &= x + 2x + 4 && | && a + b = b + a,\ ac + bc = (a + b) c \\
3x + 4 &= 3x + 4 && | && + -3x + -4 \\
0 &= 0 && && \text{waar voor elke } x
\end{aligned}
$$

$$
\begin{aligned}
8x &= 7x && | && + -7x \\
x &= 0
\end{aligned}
$$

$17 = 4x + 5 \quad | \quad + -5$
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$2x + 4 = ½ (½x - 32) + 3x \quad | \quad a (b + c) = ab + ac$
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$2(2x + 10) - x = 7 + 3x \quad | \quad a (b + c) = ab + ac$
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$3x + 20 = 7 + 3x \quad | \quad + -3x + -20$
$0 = -13$ onwaar voor elke x

$4 + 3x = x + 2(x + 2) \quad | \quad a (b + c) = ab + ac$
$4 + 3x = x + 2x + 4 \quad | \quad a + b = b + a,\ ac + bc = (a + b) c$
$3x + 4 = 3x + 4 \quad | \quad + -3x + -4$
$0 = 0$ waar voor elke x

$8x = 7x \quad | \quad + -7x$
$x = 0$ dus nooit door x delen (want $8 \neq 7$)

$y = x - 2$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

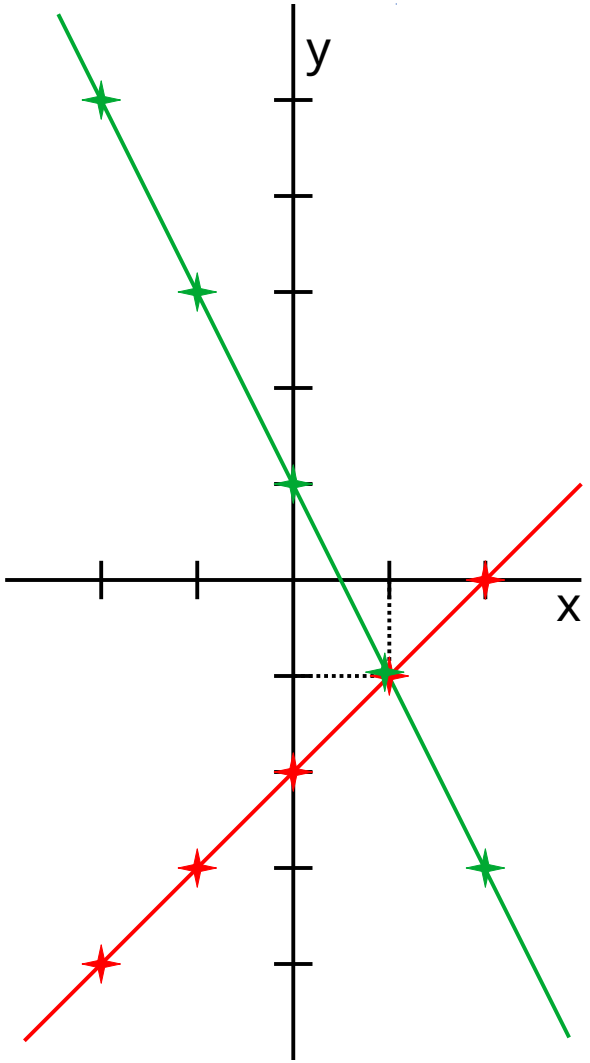
x	y
-2	5
-1	3
0	1
1	-1
2	-3

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3

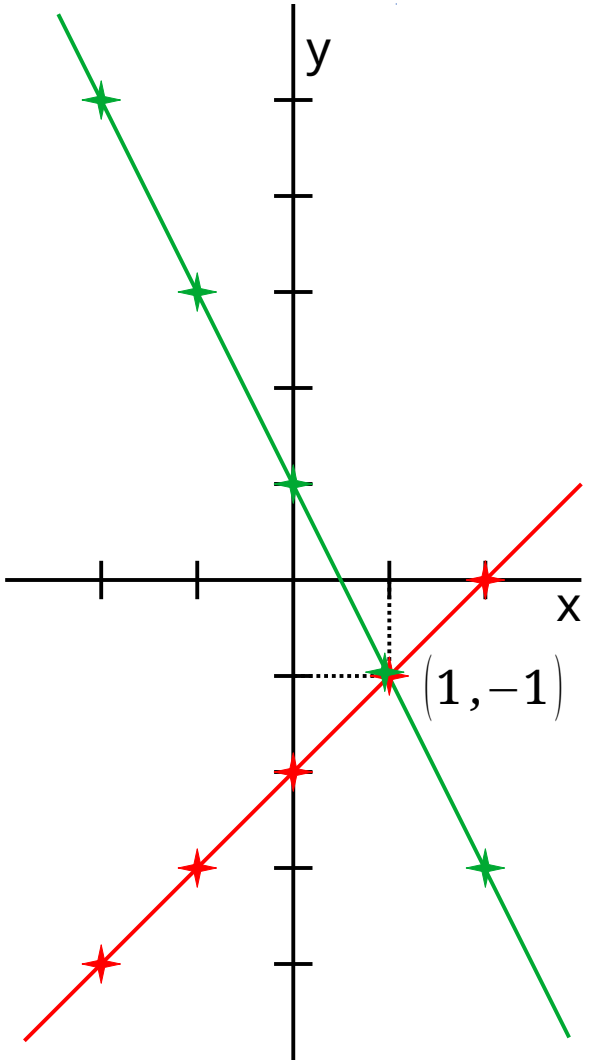


$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3

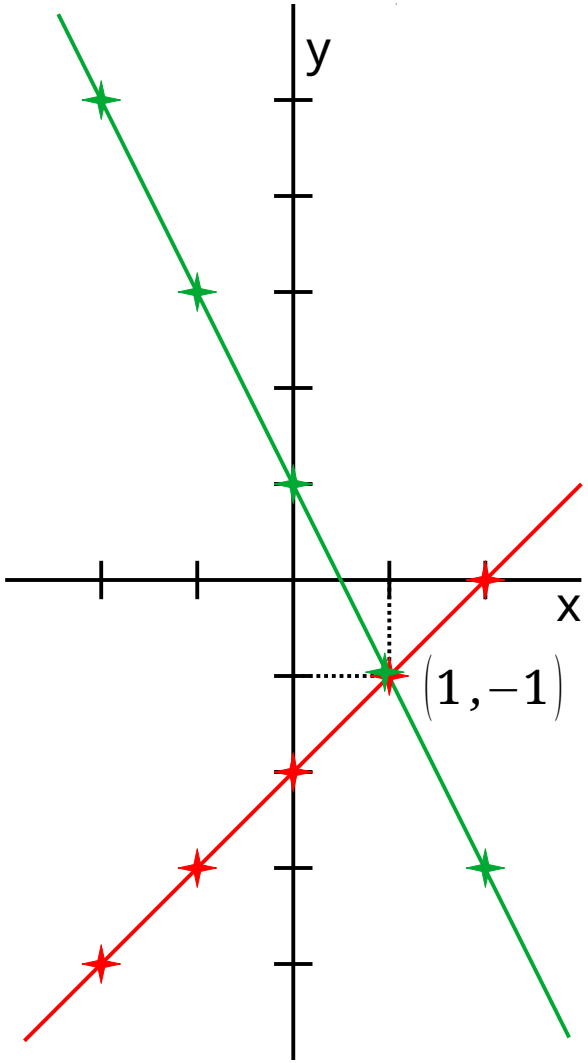


$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



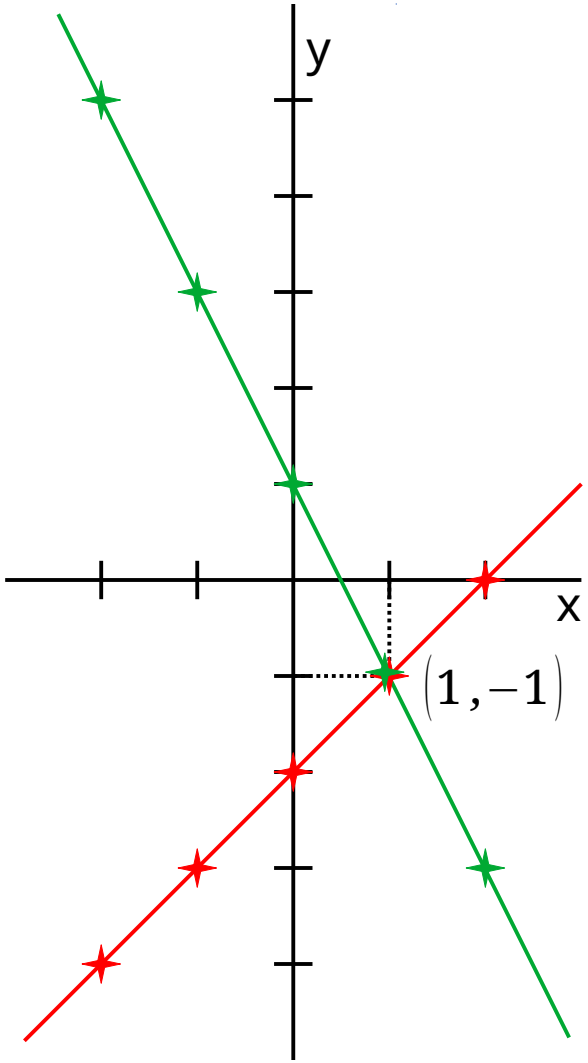
$y = y$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



$y = y$

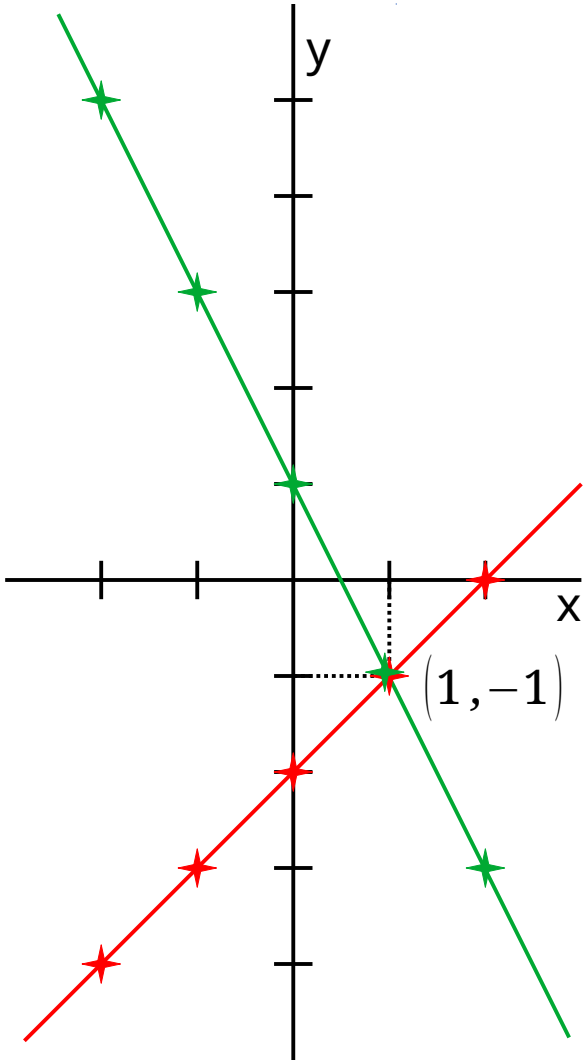
$x - 2 = -2x + 1$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



$y = y$

$x - 2 = -2x + 1$

$y = x - 2$

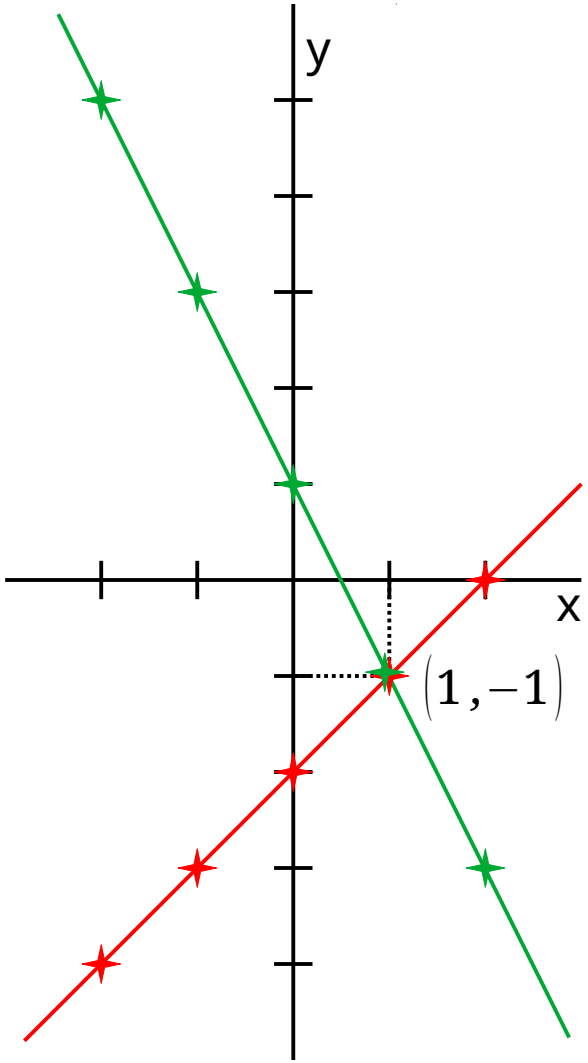
$y = -2x + 1$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



$y = y$

$x - 2 = -2x + 1$

$y = x - 2 \quad | + -x$

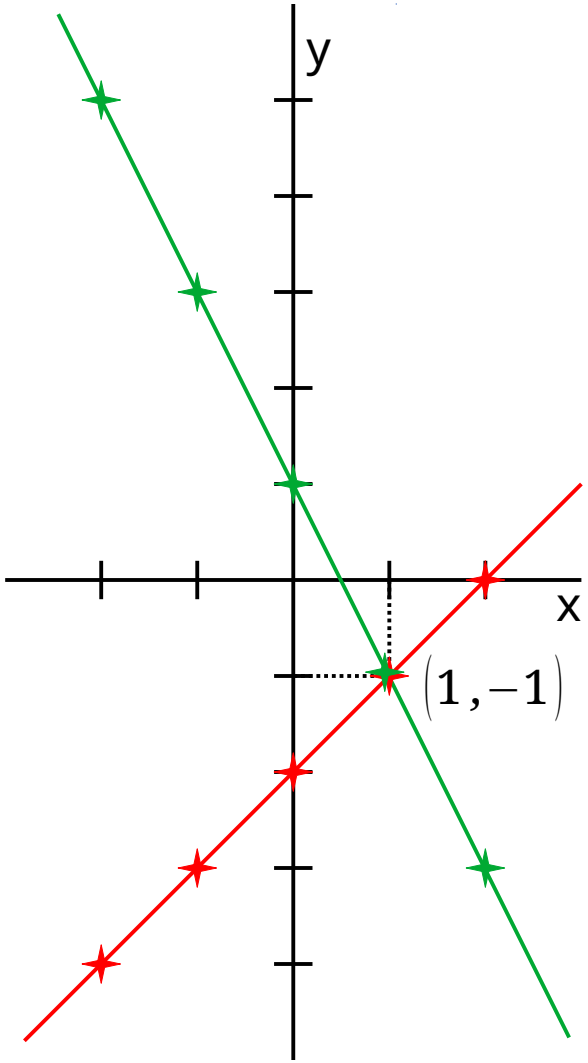
$y = -2x + 1 \quad | + 2x$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



$y = y$

$x - 2 = -2x + 1$

$y = x - 2 \quad | + -x$

$y = -2x + 1 \quad | + 2x$

$-x + y = -2$

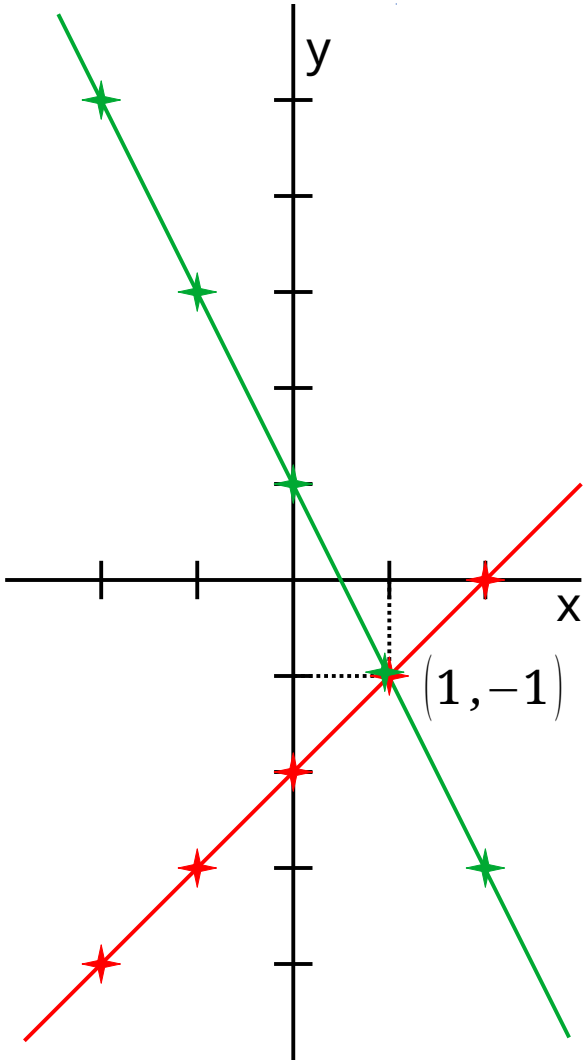
$2x + y = 1$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



$y = y$

$x - 2 = -2x + 1$

$y = x - 2 \quad | + -x$

$y = -2x + 1 \quad | + 2x$

$-x + y = -2 \quad | \times -1$

$2x + y = 1$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
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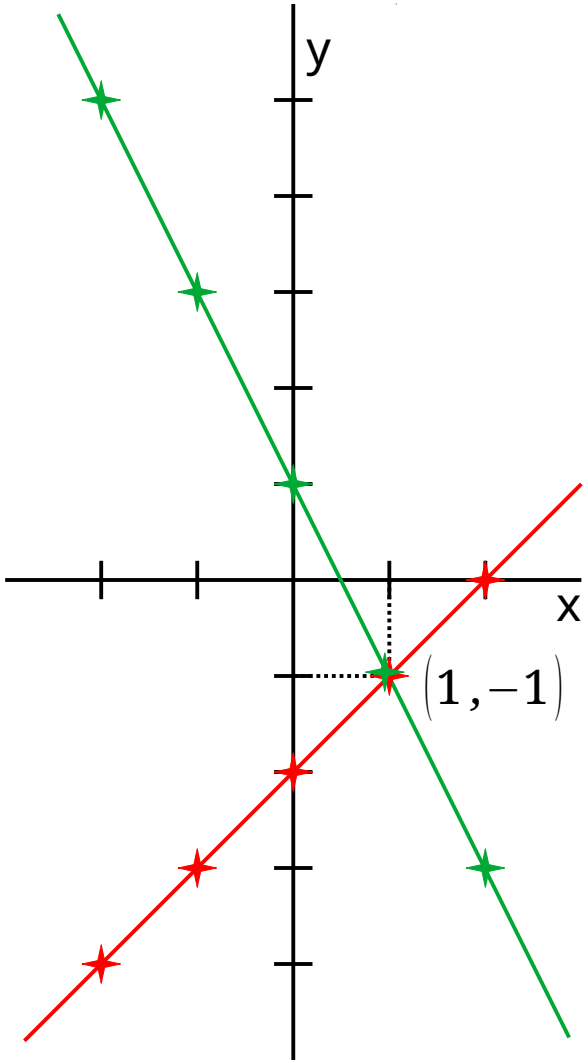
1	-1
2	-3



$y = y$

$x - 2 = -2x + 1$

$y = x - 2 \quad | + -x$

$y = -2x + 1 \quad | + 2x$

$-x + y = -2 \quad | \times -1$

$2x + y = 1$

$x - y = 2$

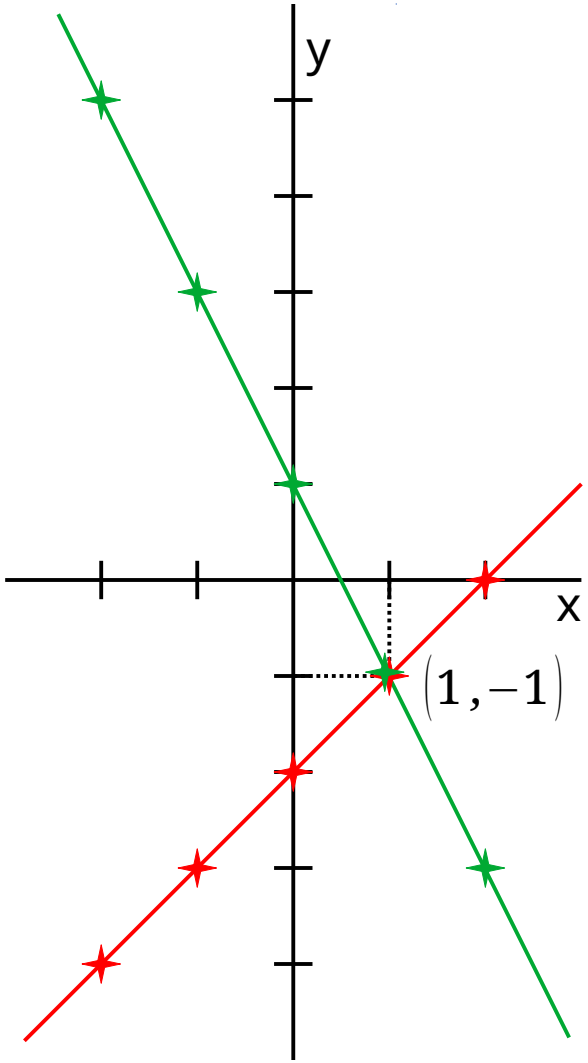
$2x + y = 1$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



$y = y$

$x - 2 = -2x + 1$

$y = x - 2$ | $+ -x$

$y = -2x + 1$ | $+ 2x$

$-x + y = -2$ | $\times -1$

$2x + y = 1$

$x - y = 2$ | $\times -2$ $+$

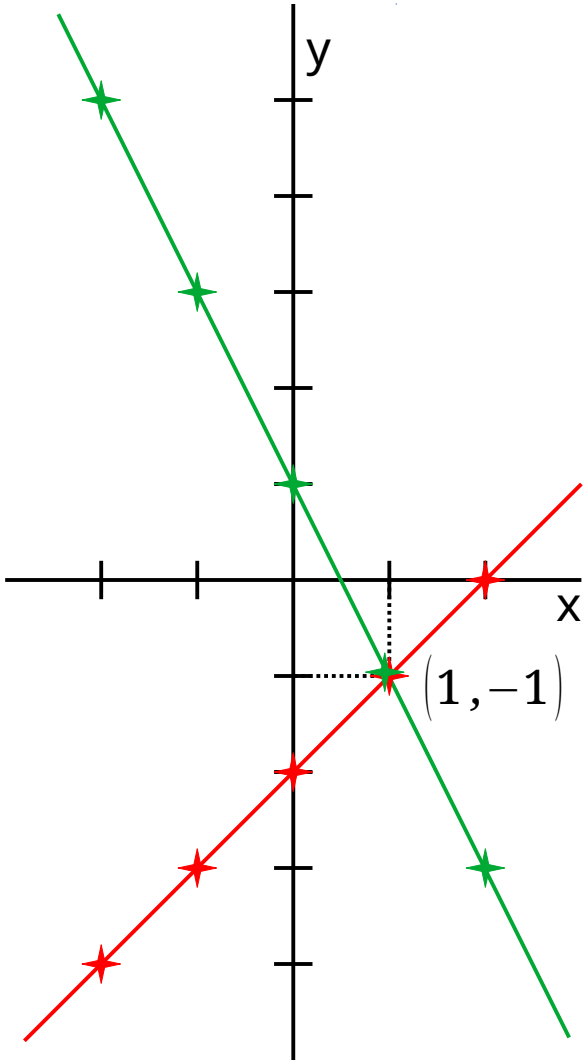
$2x + y = 1$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



$y = y$

$x - 2 = -2x + 1$

$y = x - 2$ | $+ -x$

$y = -2x + 1$ | $+ 2x$

$-x + y = -2$ | $\times -1$

$2x + y = 1$

$x - y = 2$ | $\times -2$ $+$

$2x + y = 1$

$x - y = 2$

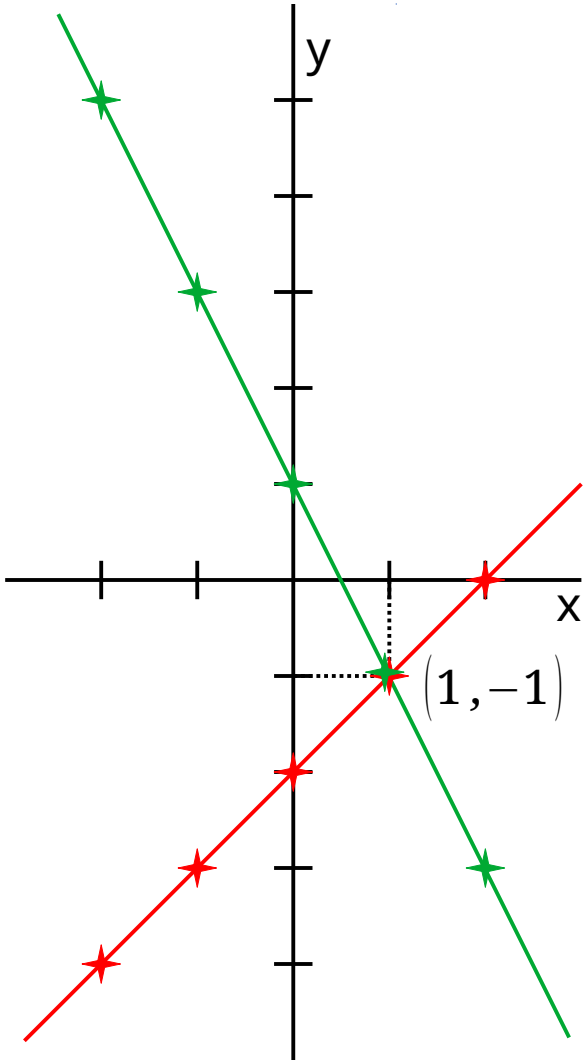
$3y = -3$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



$y = y$

$x - 2 = -2x + 1$

$y = x - 2$ | $+ -x$

$y = -2x + 1$ | $+ 2x$

$-x + y = -2$ | $\times -1$

$2x + y = 1$

$x - y = 2$ | $\times -2$ $+$

$2x + y = 1$

$x - y = 2$

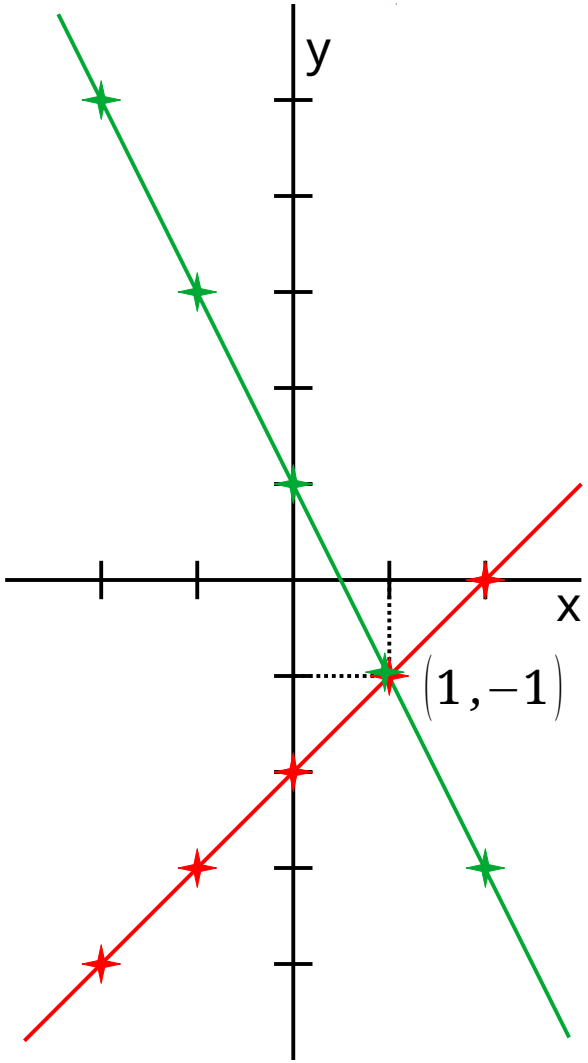
$3y = -3$ | $\times 1/3$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



$y = y$

$x - 2 = -2x + 1$

$y = x - 2$ | $+ -x$

$y = -2x + 1$ | $+ 2x$

$-x + y = -2$ | $\times -1$

$2x + y = 1$

$x - y = 2$ | $\times -2$ ↓

$2x + y = 1$ | $+$

$x - y = 2$

$3y = -3$ | $\times 1/3$

$x - y = 2$

$y = -1$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
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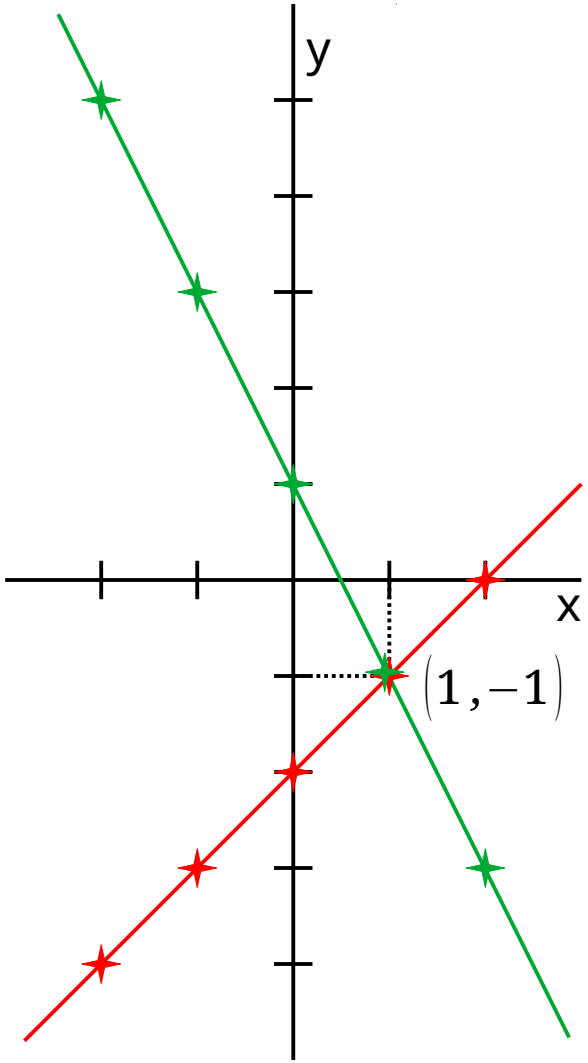


$y = y$

$x - 2 = -2x + 1$

$y = x - 2$ | + -x

$y = -2x + 1$ | + 2x

$-x + y = -2$ | × -1

$2x + y = 1$

$x - y = 2$ | × -2 ↓

$2x + y = 1$ | +

$x - y = 2$

$3y = -3$ | ×1/3

$x - y = 2$ | +

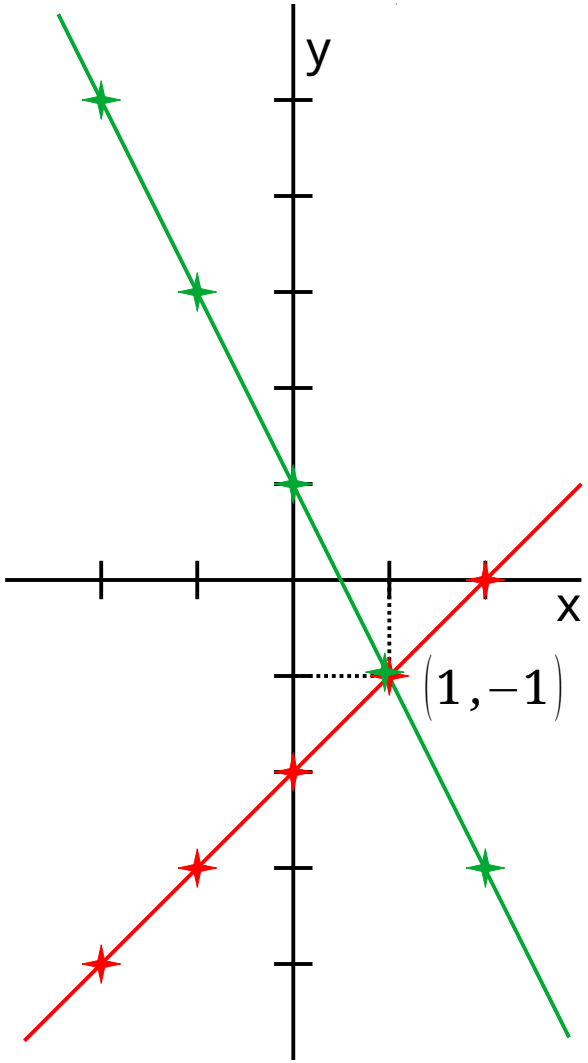
$y = -1$ | ↑

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



$y = y$

$x - 2 = -2x + 1$

$y = x - 2$ | + -x

$y = -2x + 1$ | + 2x

$-x + y = -2$ | × -1

$2x + y = 1$

$x - y = 2$ | × -2 ↓

$2x + y = 1$ | +

$x - y = 2$

$3y = -3$ | ×1/3

$x - y = 2$ | +

$y = -1$ | ↑

$x = 1$

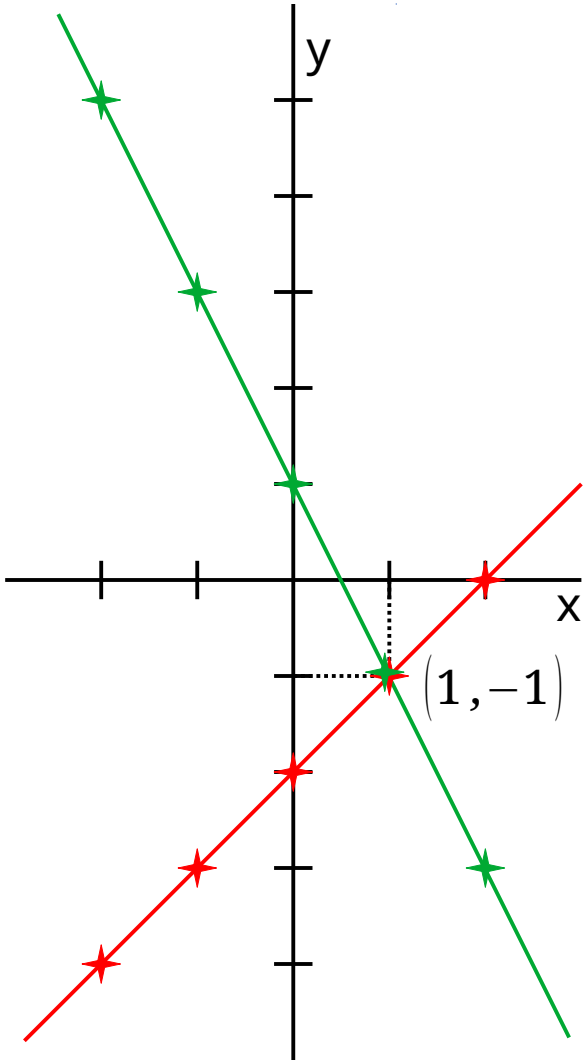
$y = -1$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



$y = y$

$x - 2 = -2x + 1$

$y = x - 2$ | + -x

$y = -2x + 1$ | + 2x

$-x + y = -2$ | × -1

$2x + y = 1$

$x - y = 2$ | × -2 ↓

$2x + y = 1$ | +

$x - y = 2$

$3y = -3$ | ×1/3

$x - y = 2$ | +

$y = -1$ | ↑

$x = 1$

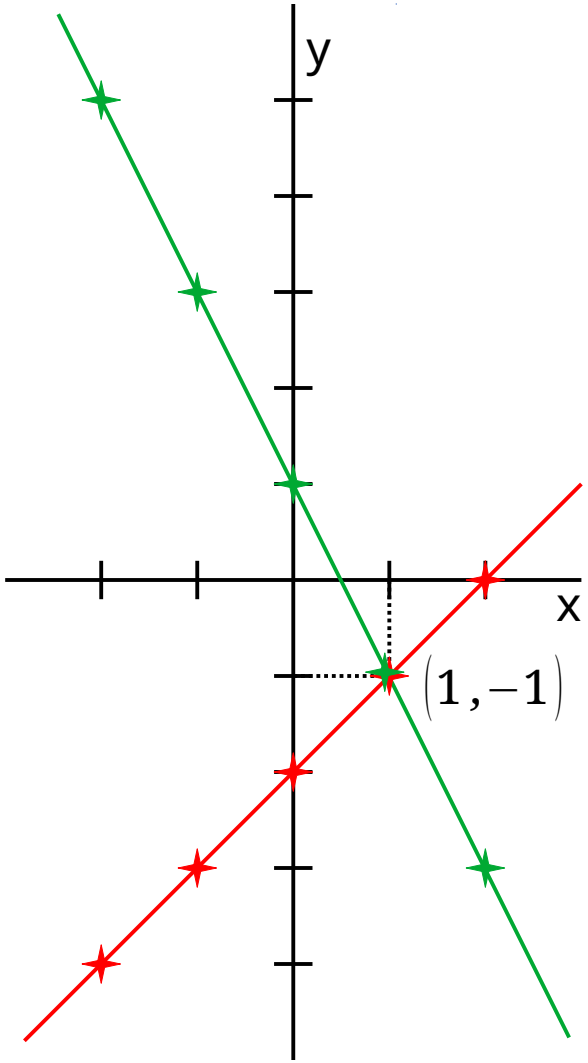
$y = -1$

$y = x - 2$

x	y
-2	-4
-1	-3
0	-2
1	-1
2	0

$y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1
2	-3



$y = y$

$x - 2 = -2x + 1$

$y = x - 2$ | + -x

$y = -2x + 1$ | + 2x

$-x + y = -2$ | × -1

$2x + y = 1$

$x - y = 2$ | × -2 ↓

$2x + y = 1$ | +

$x - y = 2$

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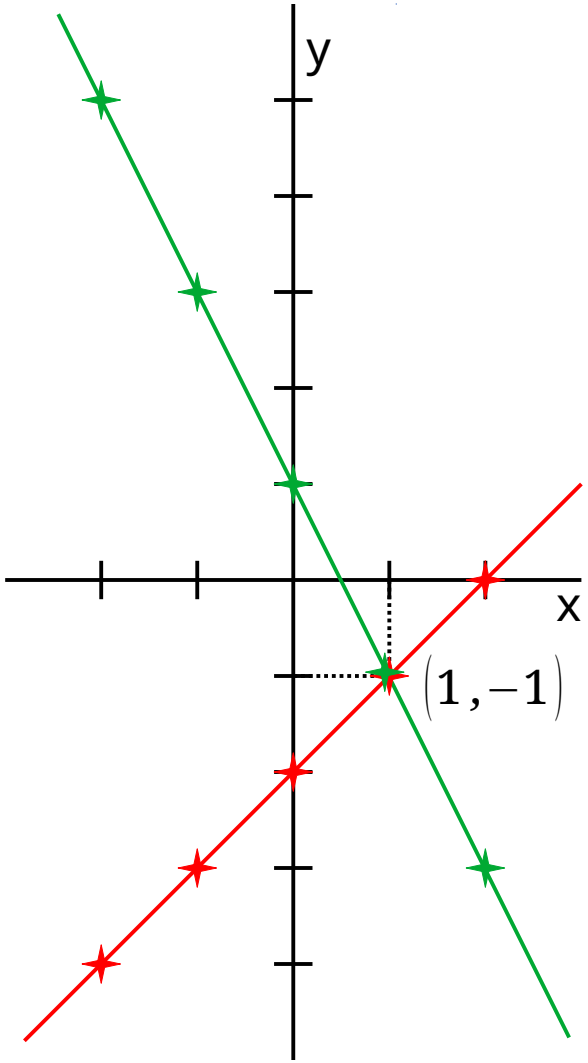

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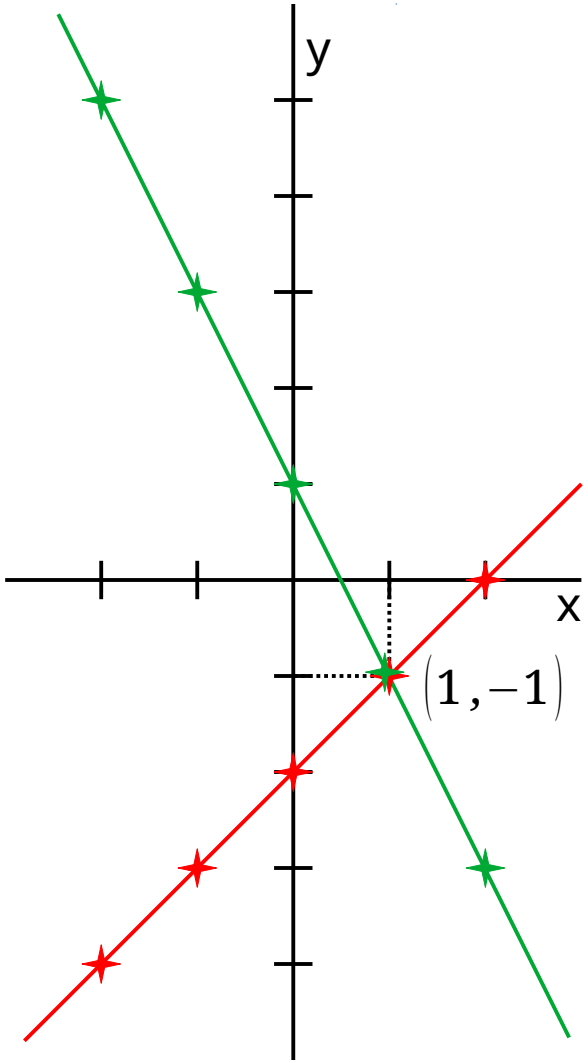

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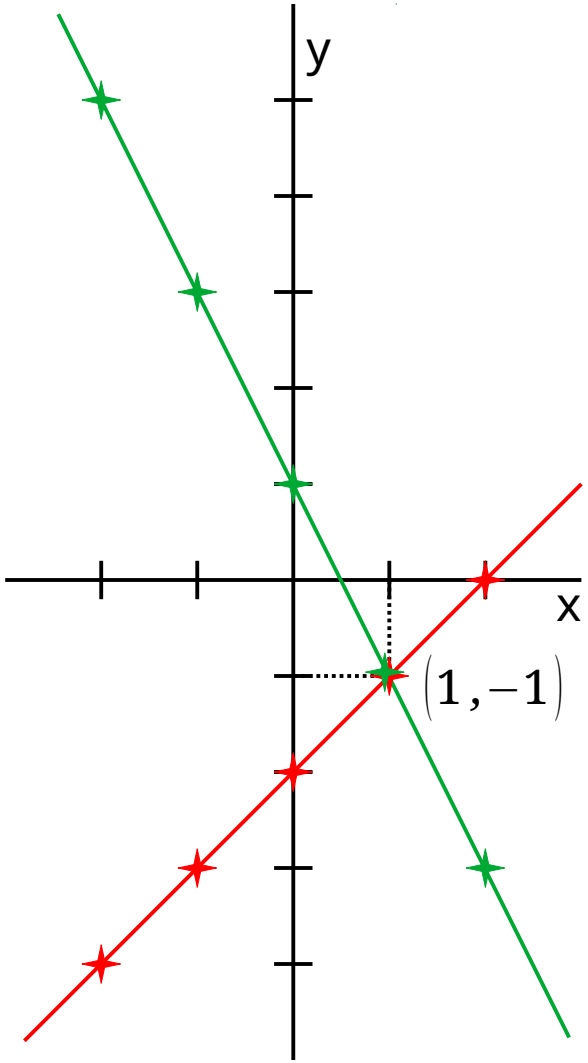

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$2x + y = 1$

$\left(\begin{array}{cc|c} -1 & 1 & -2 \\ 2 & 1 & 1 \end{array}\right)$

$x - y = 2 \quad | \times -2$

$2x + y = 1 \quad | +$

$x - y = 2$

$3y = -3 \quad | \times 1/3$

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$y = -1$

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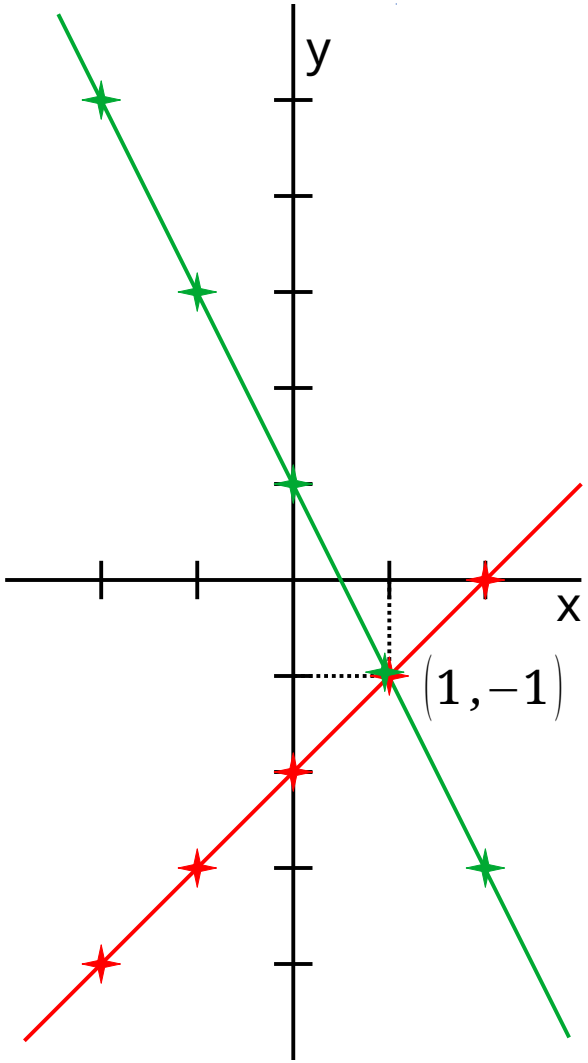

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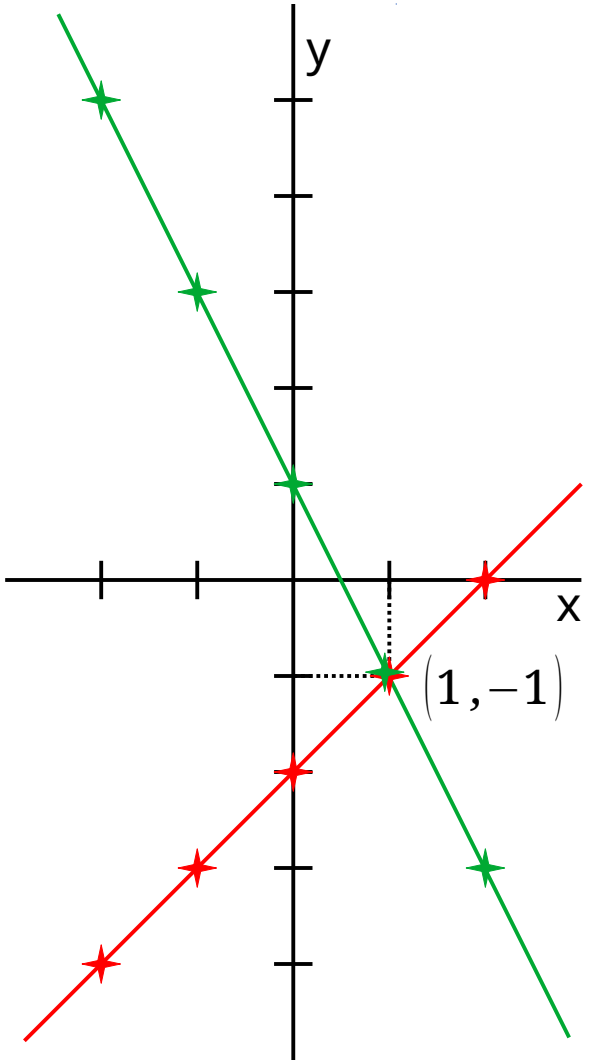

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$x - y = 2 \quad |$

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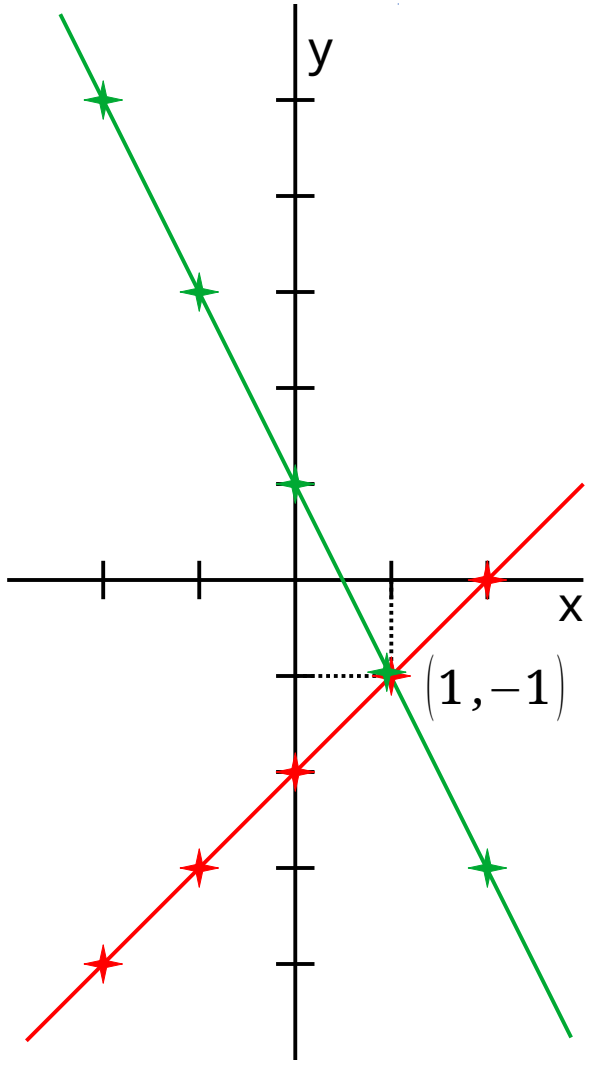

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$\begin{pmatrix} 1 & -1 & 2 \\ 2 & 1 & 1 \end{pmatrix}$

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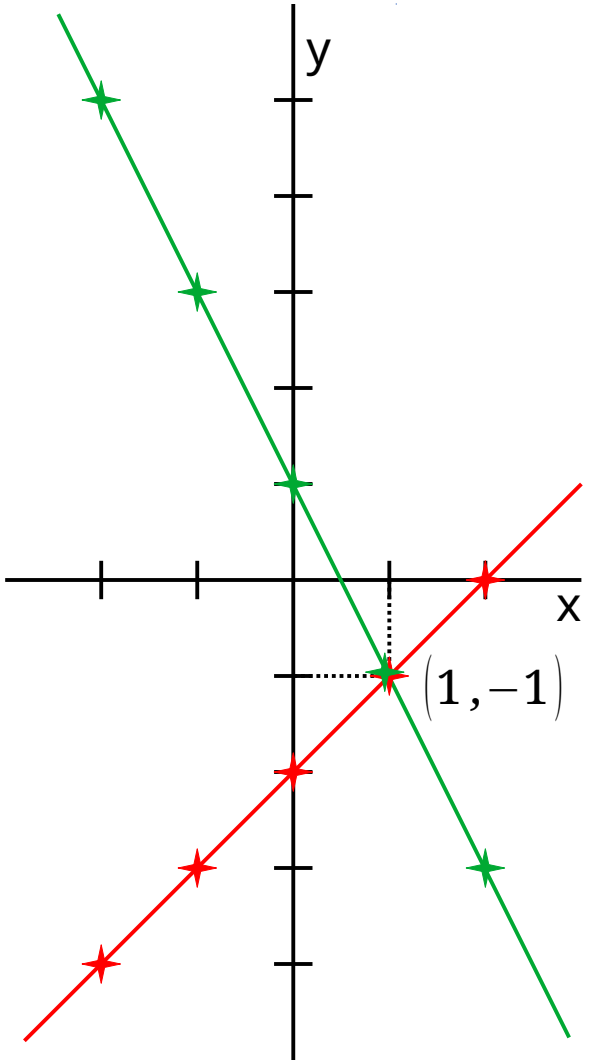

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$\begin{pmatrix} 1 & -1 & 2 \\ 0 & 3 & -3 \end{pmatrix}$

$x - y = 2$

$y = -1 \quad | \uparrow +$

$\begin{pmatrix} 1 & -1 & 2 \\ 0 & 1 & -1 \end{pmatrix}$

$\begin{pmatrix} 1 & 0 & 1 \\ 0 & 1 & -1 \end{pmatrix}$

$x = 1$

$y = -1$

$$3 \times \boxed{3 \quad 3} \times 1 \qquad\qquad 3 \times 1$$

$$\begin{pmatrix} 4 & 0 & 3 \\ 1 & -1 & 7 \\ -3 & 3 & 2 \end{pmatrix} \begin{pmatrix} -2 \\ 2 \\ 4 \end{pmatrix} = \begin{pmatrix} 4.-2 + 0.2 + 3.4 \\ 1.-2 + -1.2 + 7.4 \\ -3.-2 + 3.2 + 2.4 \end{pmatrix} = \begin{pmatrix} 4 \\ 24 \\ 20 \end{pmatrix}$$

3 x 3 3 x 1

$$\begin{pmatrix} 4 & 0 & 3 \\ 1 & -1 & 7 \\ -3 & 3 & 2 \end{pmatrix} \begin{pmatrix} -2 \\ 2 \\ 4 \end{pmatrix} = \begin{pmatrix} 4.-2 + 0.2 + 3.4 \\ 1.-2 + -1.2 + 7.4 \\ -3.-2 + 3.2 + 2.4 \end{pmatrix} = \begin{pmatrix} 4 \\ 24 \\ 20 \end{pmatrix}$$

3 x 1

3 x 3 3 x 3

$$\begin{pmatrix} 4 & 0 & 3 \\ 1 & -1 & 7 \\ -3 & 3 & 2 \end{pmatrix} \begin{pmatrix} -2 & 3 & 1 \\ 2 & -3 & -5 \\ 4 & 0 & 7 \end{pmatrix} = \begin{pmatrix} 4 & 12 & 25 \\ 24 & 6 & 55 \\ 20 & -18 & -4 \end{pmatrix}$$

3 x 3

3 x 3 3 x 1 → 3 x 1

$$\begin{pmatrix} 4 & 0 & 3 \\ 1 & -1 & 7 \\ -3 & 3 & 2 \end{pmatrix} \begin{pmatrix} -2 \\ 2 \\ 4 \end{pmatrix} = \begin{pmatrix} 4.-2 + 0.2 + 3.4 \\ 1.-2 + -1.2 + 7.4 \\ -3.-2 + 3.2 + 2.4 \end{pmatrix} = \begin{pmatrix} 4 \\ 24 \\ 20 \end{pmatrix}$$

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1 x 3 3 x 3 → 1 x 3

$$\begin{pmatrix} 1 & -1 & 7 \end{pmatrix} \begin{pmatrix} -2 & 3 & 1 \\ 2 & -3 & -5 \\ 4 & 0 & 7 \end{pmatrix} = \begin{pmatrix} 24 & 6 & 55 \end{pmatrix}$$

3 x 3 3 x 1 → 3 x 1

$$\begin{pmatrix} 4 & 0 & 3 \\ 1 & -1 & 7 \\ -3 & 3 & 2 \end{pmatrix} \begin{pmatrix} -2 \\ 2 \\ 4 \end{pmatrix} = \begin{pmatrix} 4.-2 + 0.2 + 3.4 \\ 1.-2 + -1.2 + 7.4 \\ -3.-2 + 3.2 + 2.4 \end{pmatrix} = \begin{pmatrix} 4 \\ 24 \\ 20 \end{pmatrix}$$

3 x 3 3 x 3 → 3 x 3

$$\begin{pmatrix} 4 & 0 & 3 \\ 1 & -1 & 7 \\ -3 & 3 & 2 \end{pmatrix} \begin{pmatrix} -2 & 3 & 1 \\ 2 & -3 & -5 \\ 4 & 0 & 7 \end{pmatrix} = \begin{pmatrix} 4 & 12 & 25 \\ 24 & 6 & 55 \\ 20 & -18 & -4 \end{pmatrix}$$

1 x 3 3 x 3 → 1 x 3

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$$\exists (M_1, M_2): M_1 M_2 \neq M_2 M_1$$

$y = x - 2$
$y = -2x + 1$

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$$-x + y = -2$$
$$2x + y = 1$$

$$\begin{pmatrix} -1 & 1 \\ 2 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} -2 \\ 1 \end{pmatrix}$$

$$y = x - 2$$
$$y = -2x + 1$$

$$-x + y = -2$$
$$2x + y = 1$$

$$-1x + 1y = 1 \cdot -2 + 0 \cdot 1$$
$$2x + 1y = 0 \cdot -2 + 1 \cdot 1$$

$$\begin{pmatrix} -1 & 1 \\ 2 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} -2 \\ 1 \end{pmatrix}$$

$$\begin{pmatrix} -1 & 1 \\ 2 & 1 \end{pmatrix} \quad \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

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$$\begin{aligned} -1x + 1y &= 1 \cdot -2 + 0 \cdot 1 \\ 2x + 1y &= 0 \cdot -2 + 1 \cdot 1 \end{aligned}$$

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x -1

$$\begin{pmatrix} -1 & 1 \\ 2 & 1 \end{pmatrix} \quad \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$\begin{aligned} 1x + -1y &= -1 \cdot -2 + 0 \cdot 1 \\ 2x + 1y &= 0 \cdot -2 + 1 \cdot 1 \end{aligned}$$

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$$\begin{array}{rcl} -1x + 1y & = & 1 \cdot -2 + 0 \cdot 1 \\ 2x + 1y & = & 0 \cdot -2 + 1 \cdot 1 \end{array} \quad \Big| \quad \times -1$$

$$\begin{pmatrix} -1 & 1 \\ 2 & 1 \end{pmatrix} \quad \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$\begin{array}{rcl} 1x + -1y & = & -1 \cdot -2 + 0 \cdot 1 \\ 2x + 1y & = & 0 \cdot -2 + 1 \cdot 1 \end{array} \quad \Big| \quad \downarrow \times -2 \; + \qquad \begin{pmatrix} 1 & -1 \\ 2 & 1 \end{pmatrix} \quad \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$$

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$$\begin{aligned} 1x + -1y &= -1 \cdot -2 + 0 \cdot 1 \\ 0x + 3y &= 2 \cdot -2 + 1 \cdot 1 \end{aligned} \qquad \begin{pmatrix} 1 & -1 \\ 0 & 3 \end{pmatrix} \quad \begin{pmatrix} -1 & 0 \\ 2 & 1 \end{pmatrix}$$

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x -2
+

$$\begin{pmatrix} 1 & -1 \\ 2 & 1 \end{pmatrix} \quad \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$$

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x 1/3

$$\begin{pmatrix} 1 & -1 \\ 0 & 3 \end{pmatrix} \quad \begin{pmatrix} -1 & 0 \\ 2 & 1 \end{pmatrix}$$

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$$\begin{aligned} 1x + -1y &= -1 \cdot -2 + 0 \cdot 1 \\ 2x + 1y &= 0 \cdot -2 + 1 \cdot 1 \end{aligned} \quad \Big| \quad \downarrow \times -2 \; + \quad \begin{pmatrix} 1 & -1 \\ 2 & 1 \end{pmatrix} \quad \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$$

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$$\begin{aligned} 1x + 0y &= -1/3 \cdot -2 + 1/3 \cdot 1 \\ 0x + 1y &= 2/3 \cdot -2 + 1/3 \cdot 1 \end{aligned} \quad \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \quad \begin{pmatrix} -1/3 & 1/3 \\ 2/3 & 1/3 \end{pmatrix}$$

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$$2x + y = 1$$

$$\begin{pmatrix} -1 & 1 \\ 2 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} -2 \\ 1 \end{pmatrix}$$

$$\begin{aligned} -1x + 1y &= 1 \cdot -2 + 0 \cdot 1 \\ 2x + 1y &= 0 \cdot -2 + 1 \cdot 1 \end{aligned} \quad \Big| \quad \times -1$$

$$\begin{pmatrix} -1 & 1 \\ 2 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$\begin{aligned} 1x + -1y &= -1 \cdot -2 + 0 \cdot 1 \\ 2x + 1y &= 0 \cdot -2 + 1 \cdot 1 \end{aligned} \quad \Big| \quad \downarrow \times -2 \; + \qquad \begin{pmatrix} 1 & -1 \\ 2 & 1 \end{pmatrix} \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$\begin{aligned} 1x + -1y &= -1 \cdot -2 + 0 \cdot 1 \\ 0x + 3y &= 2 \cdot -2 + 1 \cdot 1 \end{aligned} \quad \Big| \quad \times 1/3 \qquad \begin{pmatrix} 1 & -1 \\ 0 & 3 \end{pmatrix} \begin{pmatrix} -1 & 0 \\ 2 & 1 \end{pmatrix}$$

$$\begin{aligned} 1x + -1y &= -1 \cdot -2 + 0 \cdot 1 \\ 0x + 1y &= 2/3 \cdot -2 + 1/3 \cdot 1 \end{aligned} \quad \Big| \quad \uparrow + \qquad \begin{pmatrix} 1 & -1 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} -1 & 0 \\ 2/3 & 1/3 \end{pmatrix}$$

$$\begin{aligned} 1x + 0y &= -1/3 \cdot -2 + 1/3 \cdot 1 \\ 0x + 1y &= 2/3 \cdot -2 + 1/3 \cdot 1 \end{aligned} \qquad \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} -1/3 & 1/3 \\ 2/3 & 1/3 \end{pmatrix}$$

$$x = 1$$
$$y = -1$$

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -1/3 & 1/3 \\ 2/3 & 1/3 \end{pmatrix} \begin{pmatrix} -2 \\ 1 \end{pmatrix}$$

$$y = x - 2$$
$$y = -2x + 1$$

$$-x + y = -2$$
$$2x + y = 1$$

$$\begin{pmatrix} -1 & 1 \\ 2 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} -2 \\ 1 \end{pmatrix}$$

$$-1x + 1y = 1 \cdot -2 + 0 \cdot 1$$
$$2x + 1y = 0 \cdot -2 + 1 \cdot 1$$

x -1

$$\begin{pmatrix} -1 & 1 \\ 2 & 1 \end{pmatrix} \quad \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$1x + -1y = -1 \cdot -2 + 0 \cdot 1$$
$$2x + 1y = 0 \cdot -2 + 1 \cdot 1$$

x -2 ↓ +

$$\begin{pmatrix} 1 & -1 \\ 2 & 1 \end{pmatrix} \quad \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$1x + -1y = -1 \cdot -2 + 0 \cdot 1$$
$$0x + 3y = 2 \cdot -2 + 1 \cdot 1$$

x 1/3

$$\begin{pmatrix} 1 & -1 \\ 0 & 3 \end{pmatrix} \quad \begin{pmatrix} -1 & 0 \\ 2 & 1 \end{pmatrix}$$

$$1x + -1y = -1 \cdot -2 + 0 \cdot 1$$
$$0x + 1y = 2/3 \cdot -2 + 1/3 \cdot 1$$

↑ +

$$\begin{pmatrix} 1 & -1 \\ 0 & 1 \end{pmatrix} \quad \begin{pmatrix} -1 & 0 \\ 2/3 & 1/3 \end{pmatrix}$$

$$1x + 0y = -1/3 \cdot -2 + 1/3 \cdot 1$$
$$0x + 1y = 2/3 \cdot -2 + 1/3 \cdot 1$$

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \quad \begin{pmatrix} -1/3 & 1/3 \\ 2/3 & 1/3 \end{pmatrix}$$

$$x = 1$$
$$y = -1$$

$$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -1/3 & 1/3 \\ 2/3 & 1/3 \end{pmatrix} \begin{pmatrix} -2 \\ 1 \end{pmatrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ -1 & 3 & 4 & 0 & 1 & 0 \\ 9 & -4 & 7 & 0 & 0 & 1 \end{array}\right) * \begin{array}{c} \\ 1 \\ -9 \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ -1 & 3 & 4 & 0 & 1 & 0 \\ 9 & -4 & 7 & 0 & 0 & 1 \end{array}\right) * \begin{matrix} \\ 1 \\ -9 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 5 & 7 & 1 & 1 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) 1/5$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ -1 & 3 & 4 & 0 & 1 & 0 \\ 9 & -4 & 7 & 0 & 0 & 1 \end{array}\right) \begin{matrix} * \\ 1 \\ -9 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 5 & 7 & 1 & 1 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) 1/5$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) \begin{matrix} -2 \\ * \\ 22 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ -1 & 3 & 4 & 0 & 1 & 0 \\ 9 & -4 & 7 & 0 & 0 & 1 \end{array}\right) \begin{matrix} * \\ 1 \\ -9 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 5 & 7 & 1 & 1 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) 1/5$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) \begin{matrix} -2 \\ * \\ 22 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & 0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 10.8 & -4.6 & 4.4 & 1 \end{array}\right) 1/10.8$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ -1 & 3 & 4 & 0 & 1 & 0 \\ 9 & -4 & 7 & 0 & 0 & 1 \end{array}\right) \begin{array}{l} * \\ 1 \\ -9 \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 5 & 7 & 1 & 1 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) 1/5$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) \begin{array}{l} -2 \\ * \\ 22 \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & 0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 10.8 & -4.6 & 4.4 & 1 \end{array}\right) 1/10.8$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & -0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right) \begin{array}{l} -0.2 \\ -1.4 \\ * \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ -1 & 3 & 4 & 0 & 1 & 0 \\ 9 & -4 & 7 & 0 & 0 & 1 \end{array}\right) *$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 5 & 7 & 1 & 1 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) 1/5$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) \begin{array}{l} -2 \\ * \\ 22 \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & 0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 10.8 & -4.6 & 4.4 & 1 \end{array}\right) 1/10.8$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & -0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right) \begin{array}{l} -0.2 \\ -1.4 \\ * \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 0.69 & -0.48 & -0.02 \\ 0 & 1 & 0 & 0.8 & -0.37 & -0.13 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right)$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ -1 & 3 & 4 & 0 & 1 & 0 \\ 9 & -4 & 7 & 0 & 0 & 1 \end{array}\right) * \begin{matrix} \\ 1 \\ -9 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 5 & 7 & 1 & 1 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) 1/5$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) \begin{matrix} -2 \\ * \\ 22 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & 0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 10.8 & -4.6 & 4.4 & 1 \end{array}\right) 1/10.8$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & -0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right) \begin{matrix} -0.2 \\ -1.4 \\ * \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 0.69 & -0.48 & -0.02 \\ 0 & 1 & 0 & 0.8 & -0.37 & -0.13 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right)$$

$$\begin{pmatrix} 1 & 2 & 3 \\ -1 & 3 & 4 \\ 9 & -4 & 7 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 10 \\ 20 \\ -3 \end{pmatrix} \Rightarrow \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 0.69 & -0.48 & -0.02 \\ 0.8 & -0.37 & -0.13 \\ -0.43 & 0.41 & 0.09 \end{pmatrix} \begin{pmatrix} 10 \\ 20 \\ -3 \end{pmatrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ -1 & 3 & 4 & 0 & 1 & 0 \\ 9 & -4 & 7 & 0 & 0 & 1 \end{array}\right) * \begin{matrix} \\ 1 \\ -9 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 5 & 7 & 1 & 1 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) 1/5$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) \begin{matrix} -2 \\ * \\ 22 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & 0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 10.8 & -4.6 & 4.4 & 1 \end{array}\right) 1/10.8$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & -0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right) \begin{matrix} -0.2 \\ -1.4 \\ * \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 0.69 & -0.48 & -0.02 \\ 0 & 1 & 0 & 0.8 & -0.37 & -0.13 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right)$$

$$\begin{pmatrix} 1 & 2 & 3 \\ -1 & 3 & 4 \\ 9 & -4 & 7 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 10 \\ 20 \\ -3 \end{pmatrix} \Rightarrow \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 0.69 & -0.48 & -0.02 \\ 0.8 & -0.37 & -0.13 \\ -0.43 & 0.41 & 0.09 \end{pmatrix} \begin{pmatrix} 10 \\ 20 \\ -3 \end{pmatrix}$$

$$A\vec{x} = \vec{b} \Rightarrow \vec{x} = A^{-1}\vec{b}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ -1 & 3 & 4 & 0 & 1 & 0 \\ 9 & -4 & 7 & 0 & 0 & 1 \end{array}\right) * \begin{matrix} \\ 1 \\ -9 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 5 & 7 & 1 & 1 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) 1/5$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) \begin{matrix} -2 \\ * \\ 22 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & 0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 10.8 & -4.6 & 4.4 & 1 \end{array}\right) 1/10.8$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & -0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right) \begin{matrix} -0.2 \\ -1.4 \\ * \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 0.69 & -0.48 & -0.02 \\ 0 & 1 & 0 & 0.8 & -0.37 & -0.13 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right)$$

$$\begin{pmatrix} 1 & 2 & 3 \\ -1 & 3 & 4 \\ 9 & -4 & 7 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 10 \\ 20 \\ -3 \end{pmatrix} \Rightarrow \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 0.69 & -0.48 & -0.02 \\ 0.8 & -0.37 & -0.13 \\ -0.43 & 0.41 & 0.09 \end{pmatrix} \begin{pmatrix} 10 \\ 20 \\ -3 \end{pmatrix}$$

$$A\vec{x} = \vec{b} \Rightarrow \vec{x} = A^{-1}\vec{b}$$

$$\begin{pmatrix} 1 & 2 & 3 \\ -1 & 3 & 4 \\ 9 & -4 & 7 \end{pmatrix} \begin{pmatrix} 0.69 & -0.48 & -0.02 \\ 0.8 & -0.37 & -0.13 \\ -0.43 & 0.41 & 0.09 \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ -1 & 3 & 4 & 0 & 1 & 0 \\ 9 & -4 & 7 & 0 & 0 & 1 \end{array}\right) \begin{matrix} * \\ 1 \\ -9 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 5 & 7 & 1 & 1 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) 1/5$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) \begin{matrix} -2 \\ * \\ 22 \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & 0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 10.8 & -4.6 & 4.4 & 1 \end{array}\right) 1/10.8$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & -0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right) \begin{matrix} -0.2 \\ -1.4 \\ * \end{matrix}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 0.69 & -0.48 & -0.02 \\ 0 & 1 & 0 & 0.8 & -0.37 & -0.13 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right)$$

$$\begin{pmatrix} 1 & 2 & 3 \\ -1 & 3 & 4 \\ 9 & -4 & 7 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 10 \\ 20 \\ -3 \end{pmatrix} \Rightarrow \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 0.69 & -0.48 & -0.02 \\ 0.8 & -0.37 & -0.13 \\ -0.43 & 0.41 & 0.09 \end{pmatrix} \begin{pmatrix} 10 \\ 20 \\ -3 \end{pmatrix}$$

$$A\vec{x} = \vec{b} \Rightarrow \vec{x} = A^{-1}\vec{b}$$

$$\begin{pmatrix} 1 & 2 & 3 \\ -1 & 3 & 4 \\ 9 & -4 & 7 \end{pmatrix} \begin{pmatrix} 0.69 & -0.48 & -0.02 \\ 0.8 & -0.37 & -0.13 \\ -0.43 & 0.41 & 0.09 \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$M\,M^{-1} = M^{-1}\,M = I$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ -1 & 3 & 4 & 0 & 1 & 0 \\ 9 & -4 & 7 & 0 & 0 & 1 \end{array}\right) \begin{array}{c} * \\ 1 \\ -9 \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 5 & 7 & 1 & 1 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) 1/5$$

$$\left(\begin{array}{ccc|ccc} 1 & 2 & 3 & 1 & 0 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & -22 & -20 & 9 & 0 & 1 \end{array}\right) \begin{array}{c} -2 \\ * \\ 22 \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & 0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 10.8 & -4.6 & 4.4 & 1 \end{array}\right) 1/10.8$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0.2 & -0.6 & -0.4 & 0 \\ 0 & 1 & 1.4 & 0.2 & 0.2 & 0 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right) \begin{array}{c} -0.2 \\ -1.4 \\ * \end{array}$$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 0.69 & -0.48 & -0.02 \\ 0 & 1 & 0 & 0.8 & -0.37 & -0.13 \\ 0 & 0 & 1 & -0.43 & 0.41 & 0.09 \end{array}\right)$$

$$\begin{pmatrix} 1 & 2 & 3 \\ -1 & 3 & 4 \\ 9 & -4 & 7 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 10 \\ 20 \\ -3 \end{pmatrix} \Rightarrow \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 0.69 & -0.48 & -0.02 \\ 0.8 & -0.37 & -0.13 \\ -0.43 & 0.41 & 0.09 \end{pmatrix} \begin{pmatrix} 10 \\ 20 \\ -3 \end{pmatrix}$$

$$A\vec{x} = \vec{b} \Rightarrow \vec{x} = A^{-1}\vec{b}$$

$$\begin{pmatrix} 1 & 2 & 3 \\ -1 & 3 & 4 \\ 9 & -4 & 7 \end{pmatrix} \begin{pmatrix} 0.69 & -0.48 & -0.02 \\ 0.8 & -0.37 & -0.13 \\ -0.43 & 0.41 & 0.09 \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$M\,M^{-1} = M^{-1}\,M = I$$

$$\left(M^{-1}\right)^{-1} = M$$

$$\begin{pmatrix} 10 & 2 \\ -15 & 8 \end{pmatrix} + \begin{pmatrix} 8 & 3 \\ 0 & -12 \end{pmatrix} = \begin{pmatrix} 10+8 & 2+3 \\ -15+0 & 8+-12 \end{pmatrix} = \begin{pmatrix} 18 & 5 \\ -15 & -4 \end{pmatrix}$$

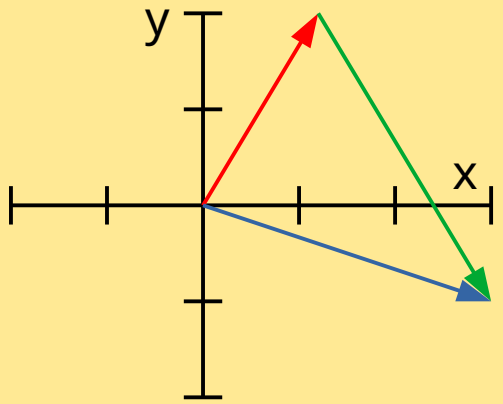
$$\begin{pmatrix} 10 & 2 \\ -15 & 8 \end{pmatrix} + \begin{pmatrix} 8 & 3 \\ 0 & -12 \end{pmatrix} = \begin{pmatrix} 10+8 & 2+3 \\ -15+0 & 8+-12 \end{pmatrix} = \begin{pmatrix} 18 & 5 \\ -15 & -4 \end{pmatrix}$$

$$\forall (M_1, M_2):$$

$$M_1 + M_2 = M_2 + M_1$$

$$\begin{pmatrix} 10 & 2 \\ -15 & 8 \end{pmatrix} + \begin{pmatrix} 8 & 3 \\ 0 & -12 \end{pmatrix} = \begin{pmatrix} 10+8 & 2+3 \\ -15+0 & 8+-12 \end{pmatrix} = \begin{pmatrix} 18 & 5 \\ -15 & -4 \end{pmatrix}$$

$$\begin{pmatrix} 1 \\ 2 \end{pmatrix} + \begin{pmatrix} 2 \\ -3 \end{pmatrix} = \begin{pmatrix} 1+2 \\ 2+-3 \end{pmatrix} = \begin{pmatrix} 3 \\ -1 \end{pmatrix}$$



$$\forall (M_1, M_2):$$

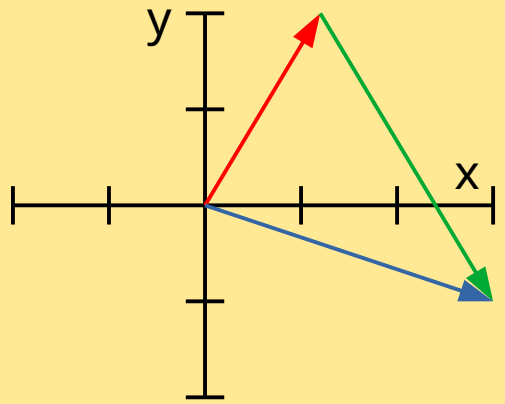
$$M_1 + M_2 = M_2 + M_1$$

$$\begin{pmatrix} 10 & 2 \\ -15 & 8 \end{pmatrix} + \begin{pmatrix} 8 & 3 \\ 0 & -12 \end{pmatrix} = \begin{pmatrix} 10+8 & 2+3 \\ -15+0 & 8+-12 \end{pmatrix} = \begin{pmatrix} 18 & 5 \\ -15 & -4 \end{pmatrix}$$

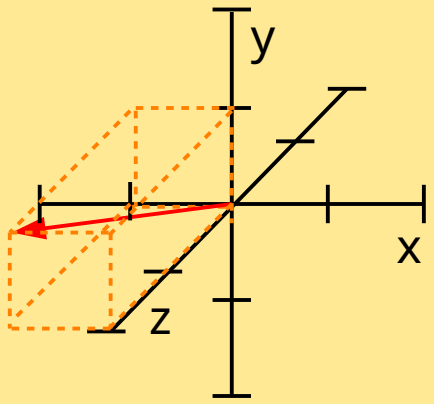
$$\forall (M_1, M_2):$$

$$M_1 + M_2 = M_2 + M_1$$

$$\begin{pmatrix} 1 \\ 2 \end{pmatrix} + \begin{pmatrix} 2 \\ -3 \end{pmatrix} = \begin{pmatrix} 1+2 \\ 2+-3 \end{pmatrix} = \begin{pmatrix} 3 \\ -1 \end{pmatrix}$$



$$\begin{pmatrix} -1 \\ 1 \\ 2 \end{pmatrix}$$

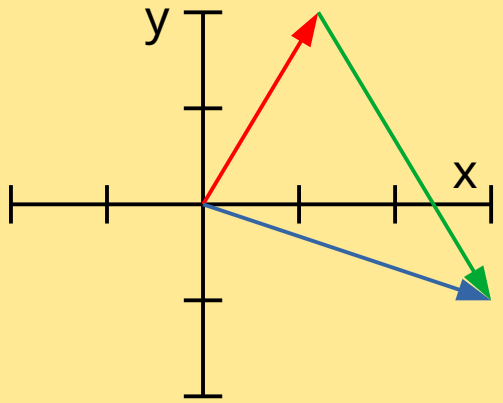


$$\begin{pmatrix} 10 & 2 \\ -15 & 8 \end{pmatrix} + \begin{pmatrix} 8 & 3 \\ 0 & -12 \end{pmatrix} = \begin{pmatrix} 10+8 & 2+3 \\ -15+0 & 8+-12 \end{pmatrix} = \begin{pmatrix} 18 & 5 \\ -15 & -4 \end{pmatrix}$$

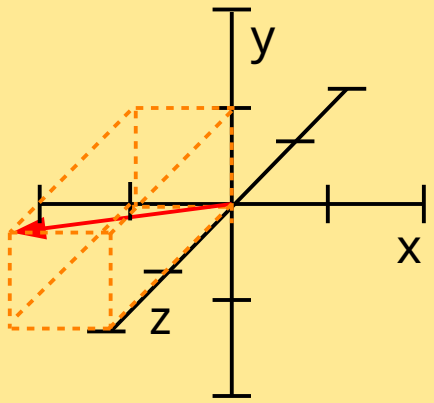
$$\forall (M_1, M_2):$$

$$M_1 + M_2 = M_2 + M_1$$

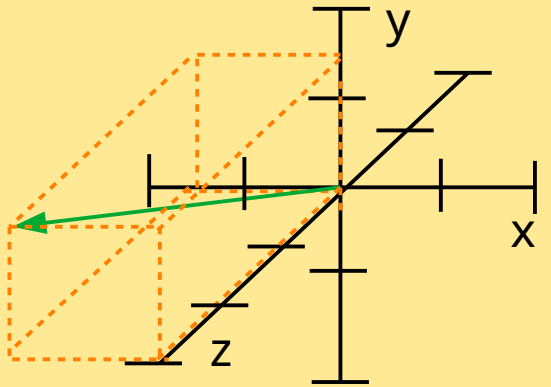
$$\begin{pmatrix} 1 \\ 2 \end{pmatrix} + \begin{pmatrix} 2 \\ -3 \end{pmatrix} = \begin{pmatrix} 1+2 \\ 2+-3 \end{pmatrix} = \begin{pmatrix} 3 \\ -1 \end{pmatrix}$$



$$\begin{pmatrix} -1 \\ 1 \\ 2 \end{pmatrix}$$



$$1.5 * \begin{pmatrix} -1 \\ 1 \\ 2 \end{pmatrix} = \begin{pmatrix} 1.5 \cdot -1 \\ 1.5 \cdot 1 \\ 1.5 \cdot 3 \end{pmatrix} = \begin{pmatrix} -1.5 \\ 1.5 \\ 3 \end{pmatrix}$$

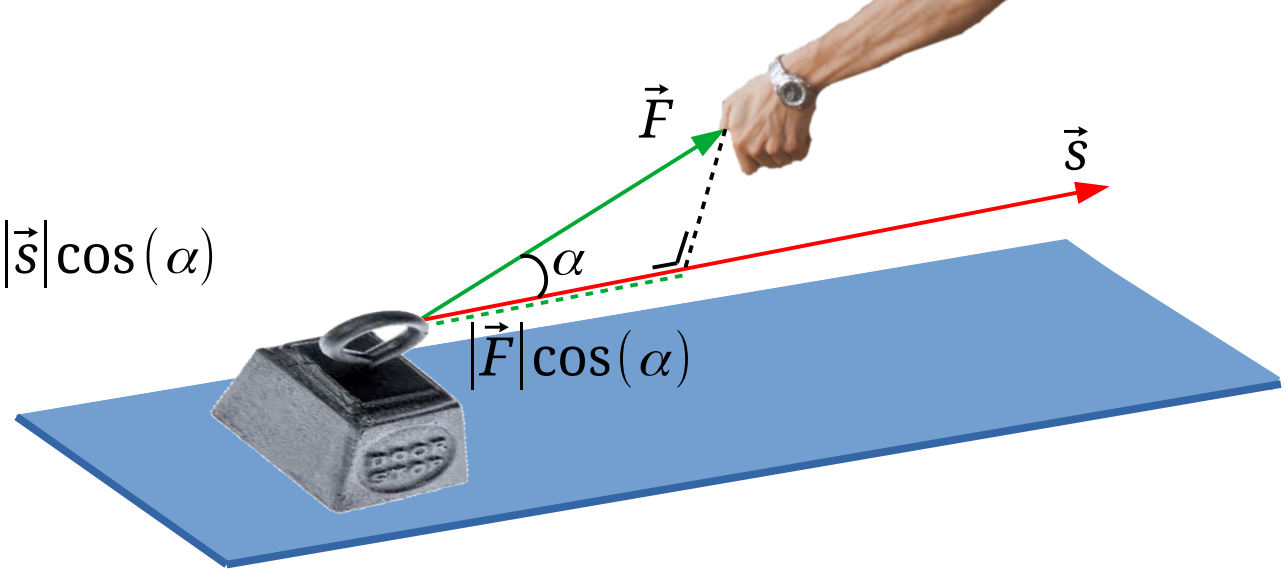


$$\begin{pmatrix} 2 \\ 1 \\ -2 \end{pmatrix} \cdot \begin{pmatrix} 1 \\ 1 \\ -1 \end{pmatrix} = 2.1 + 1.1 + -2.-1 = 5$$

$$\vec{F} \cdot \vec{s} = E$$

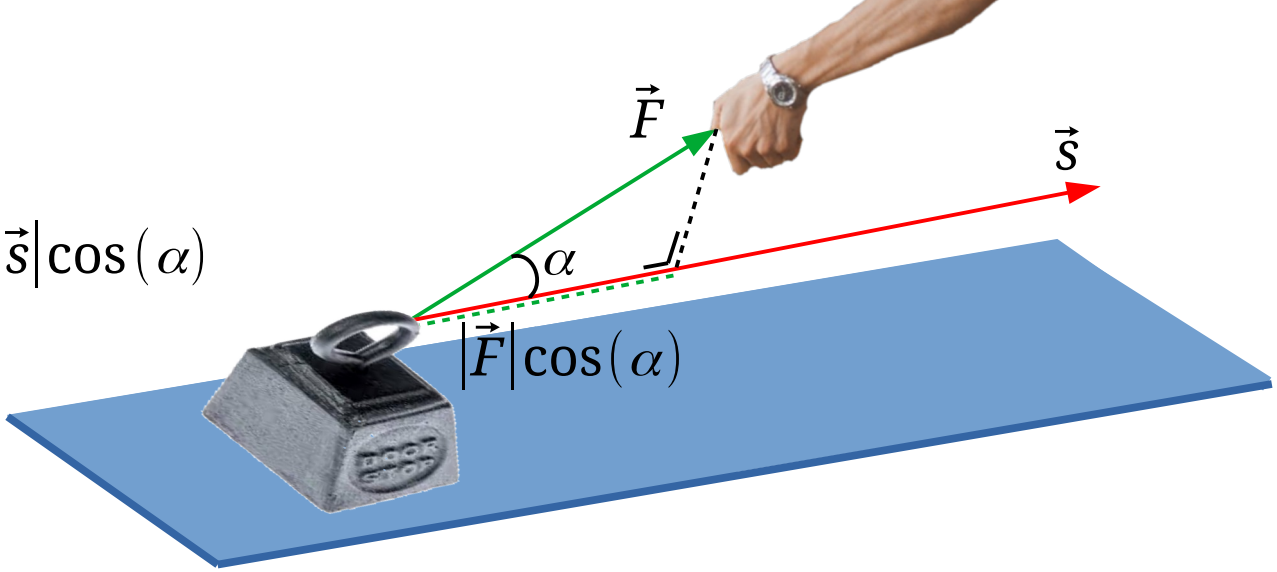
$$\begin{pmatrix} 2 \\ 1 \\ -2 \end{pmatrix} \cdot \begin{pmatrix} 1 \\ 1 \\ -1 \end{pmatrix} = 2.1 + 1.1 + -2.-1 = 5 = \left|\vec{F}\right|\left|\vec{s}\right|\cos(\alpha)$$

$$\vec{F} \cdot \vec{s} = E$$



$$\begin{pmatrix}2\\1\\-2\end{pmatrix}\cdot\begin{pmatrix}1\\1\\-1\end{pmatrix}=2.1+1.1+-2.-1=5=\left|\vec{F}\right|\left|\vec{s}\right|\cos(\alpha)$$

$$\vec{F}\cdot\vec{s}=E$$



$$\begin{pmatrix}a\\b\\c\end{pmatrix}\times\begin{pmatrix}d\\e\\f\end{pmatrix}=\begin{pmatrix}bf-ce\\cd-af\\ae-bd\end{pmatrix}$$

$$\vec{v}\times\vec{B}=\vec{F}$$

$$\begin{pmatrix}2\\1\\-2\end{pmatrix}\cdot\begin{pmatrix}1\\1\\-1\end{pmatrix}=2.1+1.1+-2.-1=5=\left|\vec{F}\right|\left|\vec{s}\right|\cos(\alpha)$$

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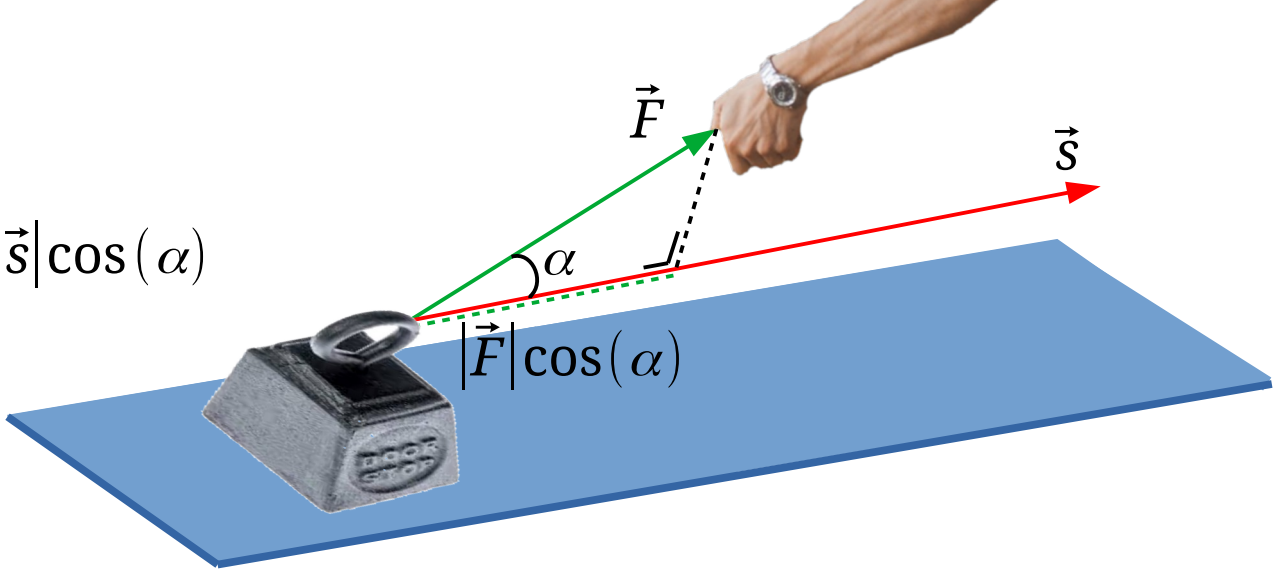
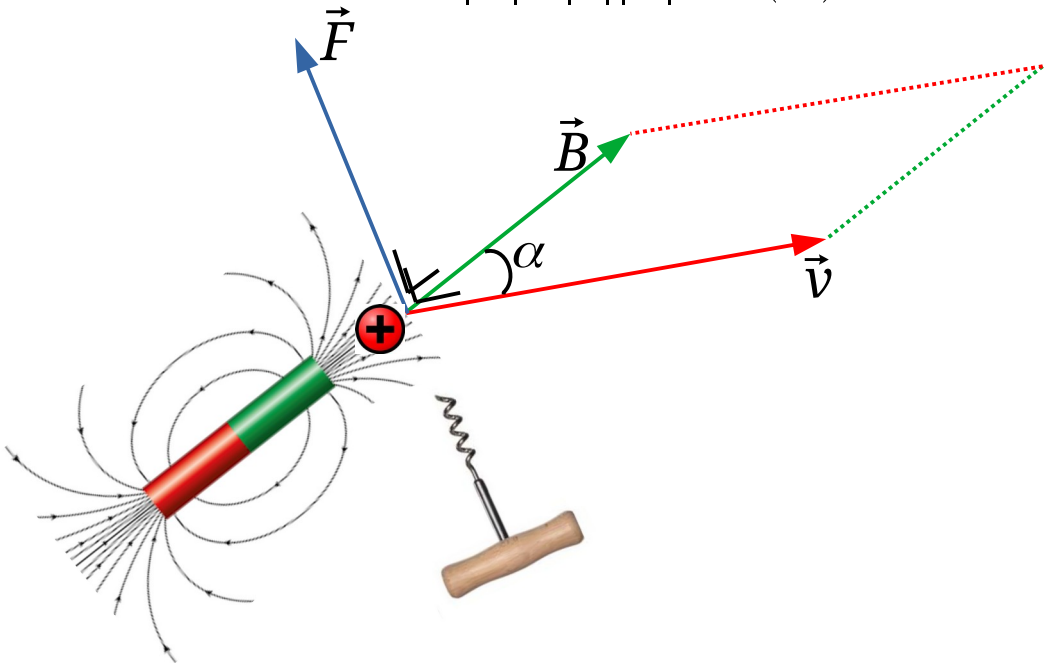


$$\begin{pmatrix}a\\b\\c\end{pmatrix}\times\begin{pmatrix}d\\e\\f\end{pmatrix}=\begin{pmatrix}bf-ce\\cd-af\\ae-bd\end{pmatrix}$$

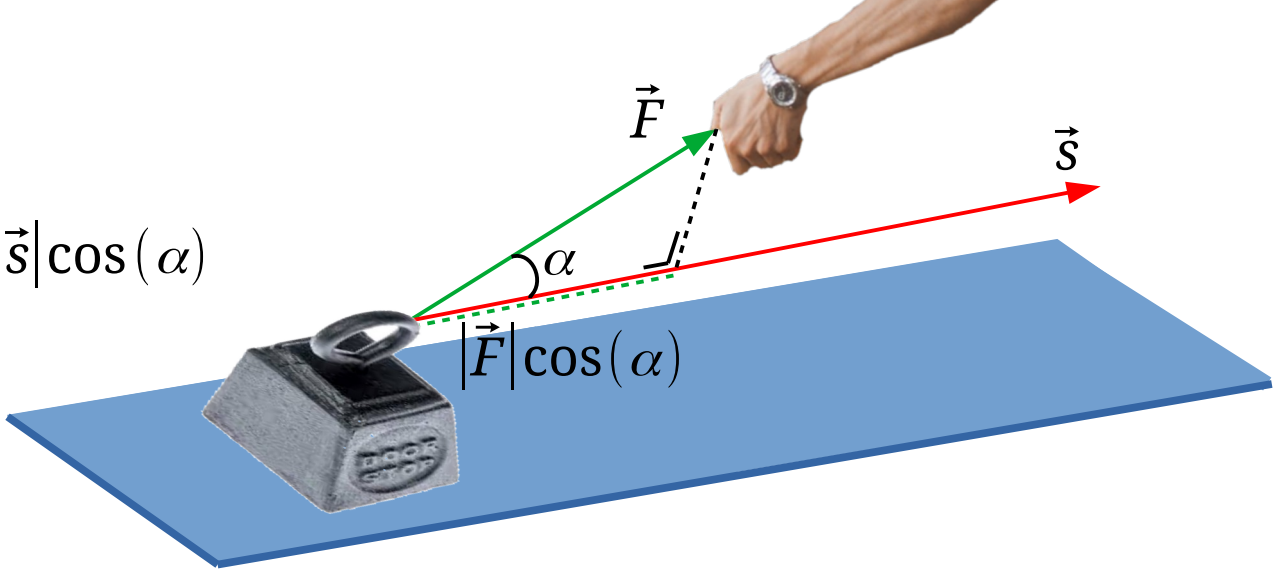
$$\vec{v}\times\vec{B}=\vec{F}$$

$$\left|\vec{F}\right|=\left|\vec{v}\right|\left|\vec{B}\right|\sin(\alpha)$$



$$\begin{pmatrix} 2 \\ 1 \\ -2 \end{pmatrix} \cdot \begin{pmatrix} 1 \\ 1 \\ -1 \end{pmatrix} = 2.1 + 1.1 + -2.-1 = 5 = |\vec{F}||\vec{s}|\cos(\alpha)$$

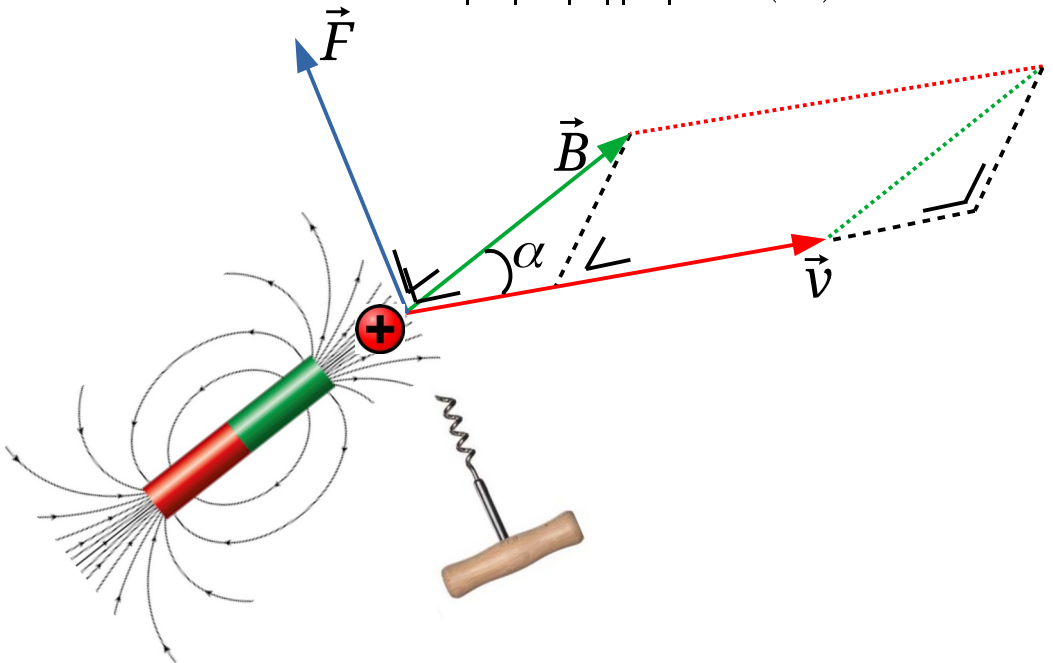
$$\vec{F} \cdot \vec{s} = E$$



$$\begin{pmatrix} a \\ b \\ c \end{pmatrix} \times \begin{pmatrix} d \\ e \\ f \end{pmatrix} = \begin{pmatrix} bf - ce \\ cd - af \\ ae - bd \end{pmatrix}$$

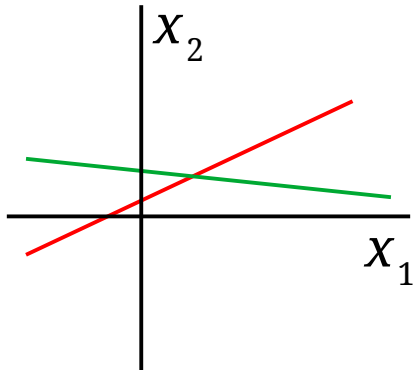
$$\vec{v} \times \vec{B} = \vec{F}$$

$$|\vec{F}| = |\vec{v}||\vec{B}|\sin(\alpha)$$

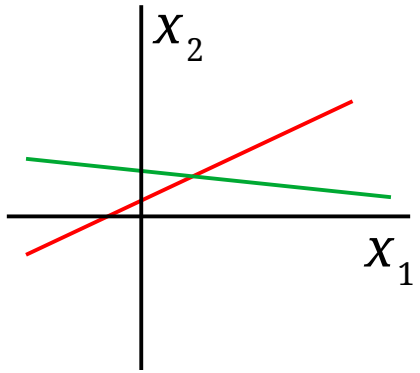


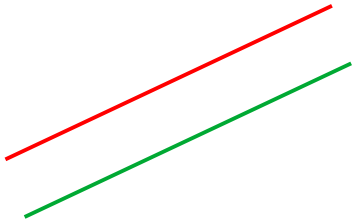
$$\begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \begin{pmatrix} b_1 \\ b_2 \end{pmatrix}$$

$$\begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \begin{pmatrix} b_1 \\ b_2 \end{pmatrix}$$



$$\begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \begin{pmatrix} b_1 \\ b_2 \end{pmatrix}$$





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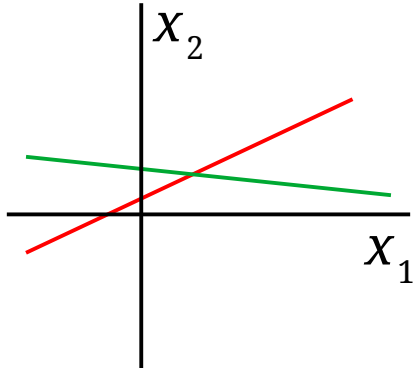
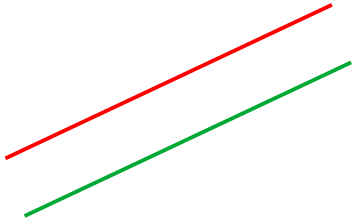
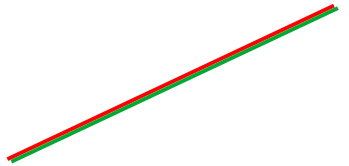
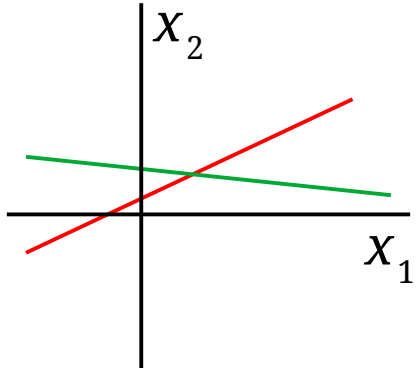
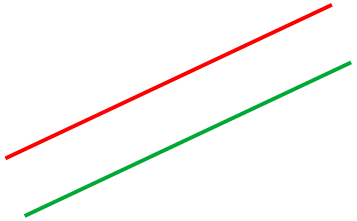


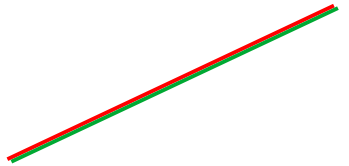




$$\begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \begin{pmatrix} b_1 \\ b_2 \end{pmatrix}$$







$$\begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = \begin{pmatrix} b_1 \\ b_2 \\ b_3 \end{pmatrix}$$

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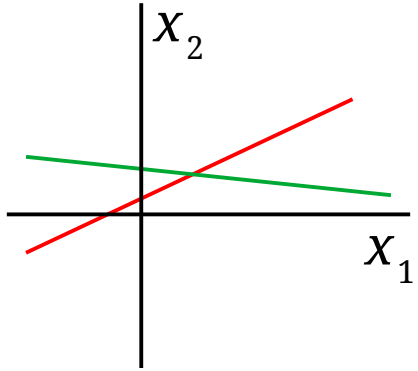
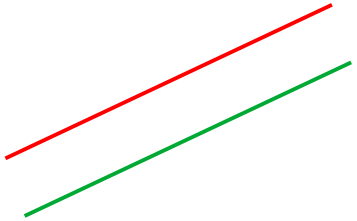
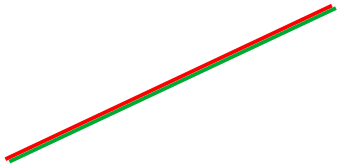
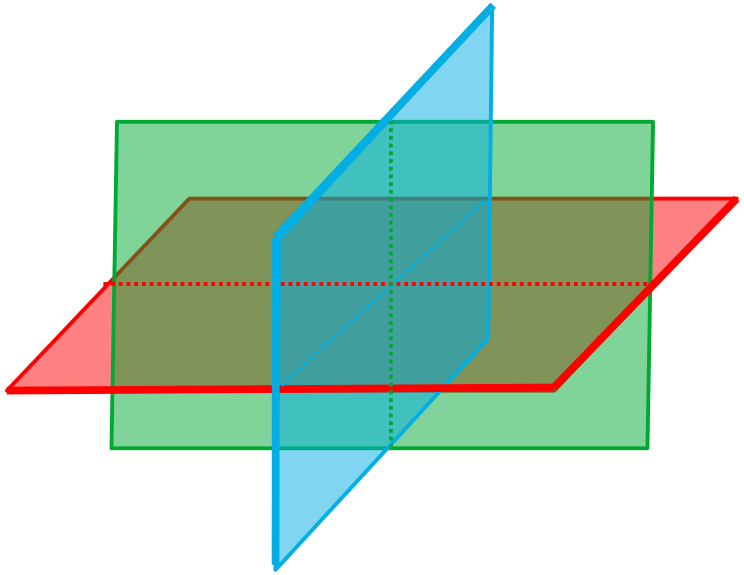
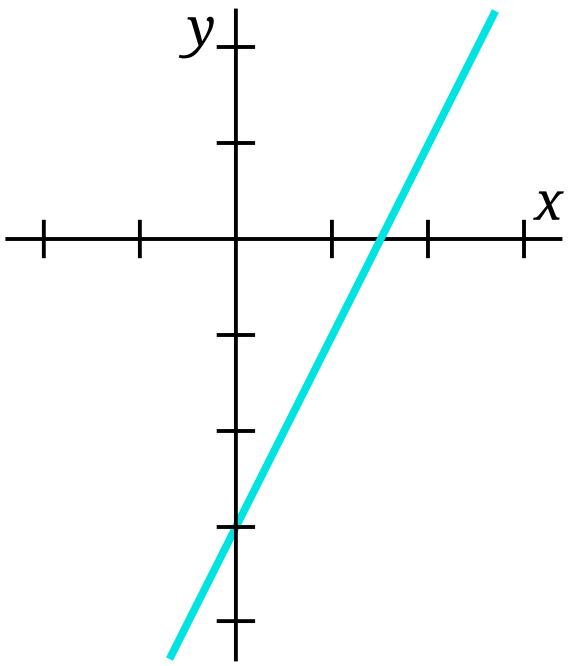




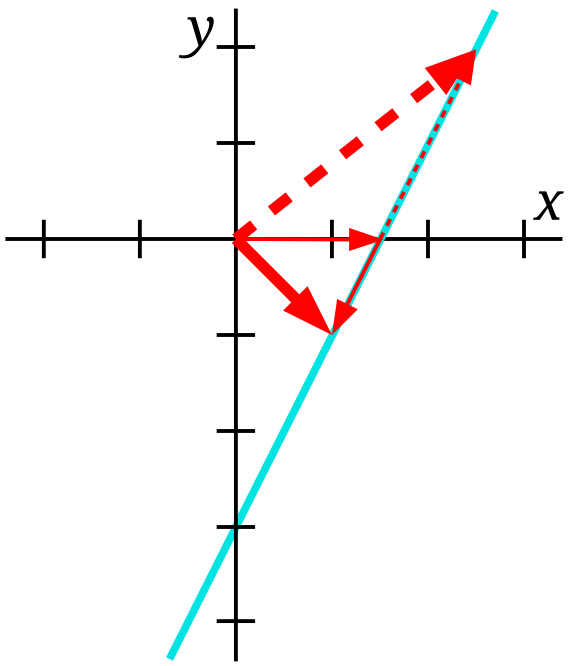


$$\begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = \begin{pmatrix} b_1 \\ b_2 \\ b_3 \end{pmatrix}$$



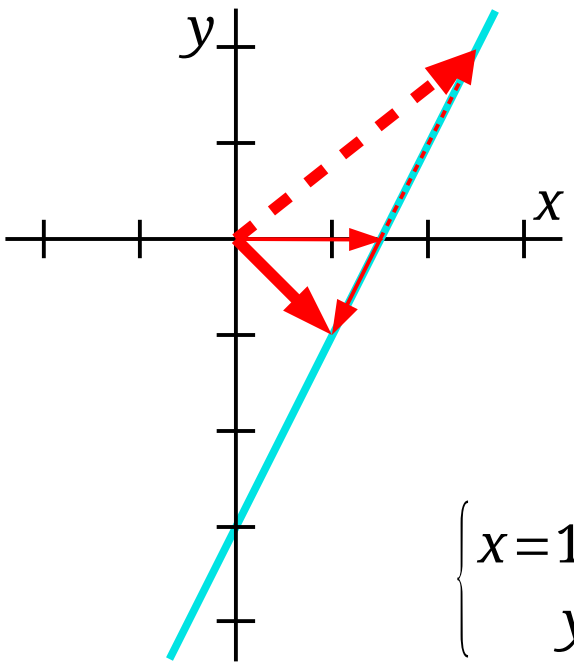


$y = 2x - 3$



$$y = 2x - 3$$

$$\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 1.5 \\ 0 \end{pmatrix} + \lambda \begin{pmatrix} -0.5 \\ -1 \end{pmatrix}$$



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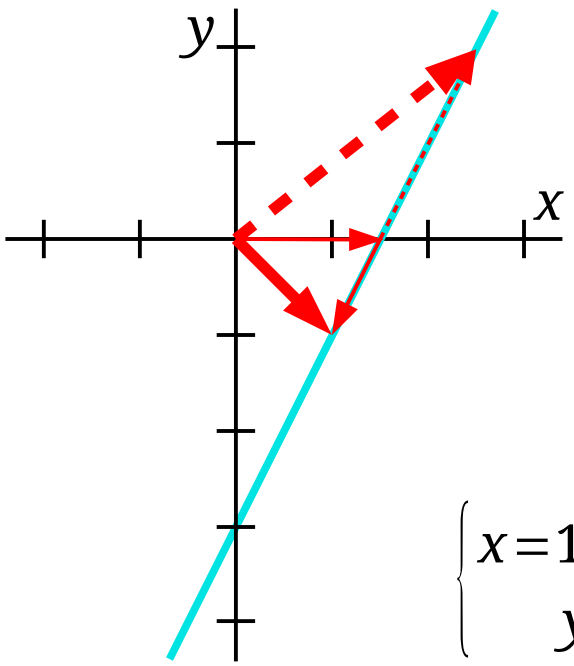
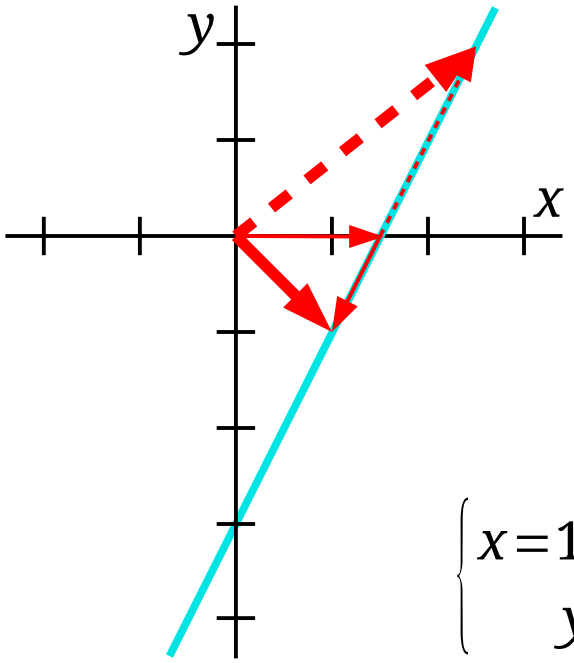
$$\begin{cases} x = 1.5 - 0.5\lambda \\ y = -\lambda \end{cases}$$



$$y=2x-3$$

$$\begin{pmatrix} x \\ y \end{pmatrix}=\begin{pmatrix} 1.5 \\ 0 \end{pmatrix}+\lambda\begin{pmatrix} -0.5 \\ -1 \end{pmatrix}$$

$$\begin{cases} x=1.5-0.5\lambda \\ y=-\lambda \end{cases} \qquad \begin{cases} 2x=3-\lambda \\ y=-\lambda \end{cases}$$



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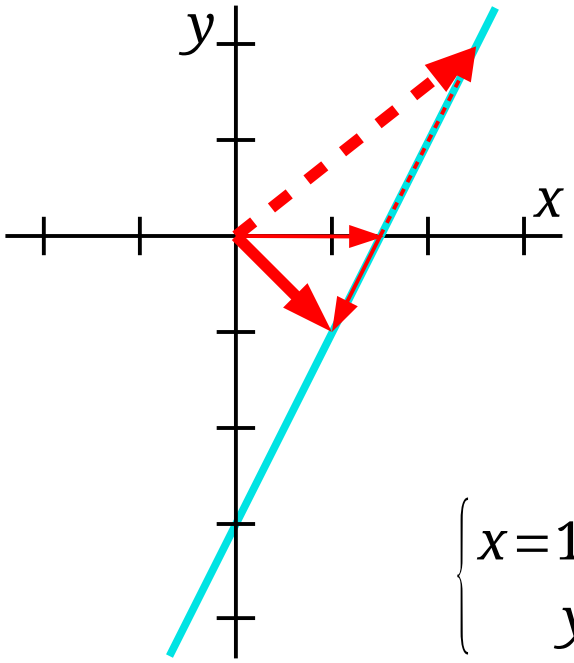
$$\begin{cases} x=1.5-0.5\lambda \\ y=-\lambda \end{cases} \quad \begin{cases} 2x=3-\lambda \\ y=-\lambda \end{cases} \quad \begin{cases} -\lambda=2x-3 \\ y=-\lambda \end{cases}$$



$$y = 2x - 3$$

$$\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 1.5 \\ 0 \end{pmatrix} + \lambda \begin{pmatrix} -0.5 \\ -1 \end{pmatrix}$$

$$\begin{cases} x = 1.5 - 0.5\lambda \\ y = -\lambda \end{cases} \quad \begin{cases} 2x = 3 - \lambda \\ y = -\lambda \end{cases} \quad \begin{cases} -\lambda = 2x - 3 \\ y = -\lambda \end{cases}$$

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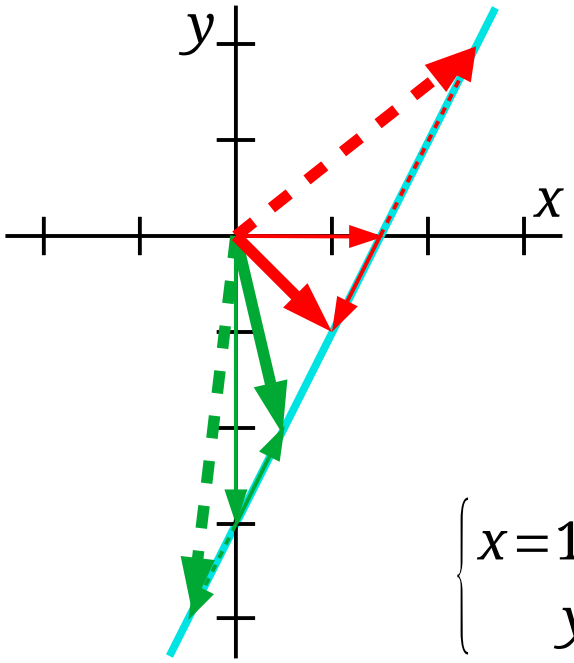

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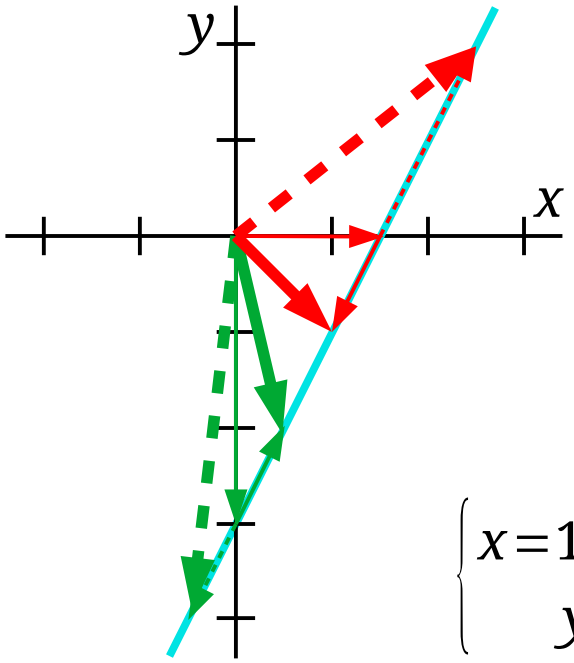

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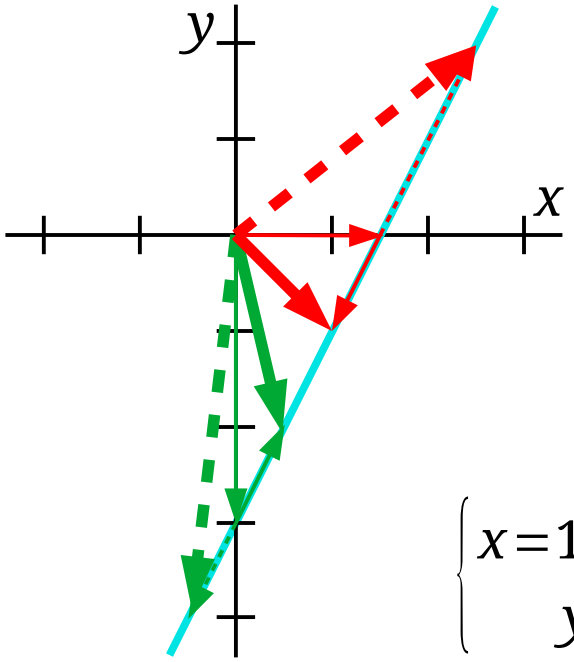

$$y=2x-3$$

$$\begin{pmatrix}x\\y\end{pmatrix}=\begin{pmatrix}1.5\\0\end{pmatrix}+\lambda\begin{pmatrix}-0.5\\-1\end{pmatrix}$$

$$\begin{cases}x=1.5-0.5\lambda\\y=-\lambda\end{cases}\qquad\begin{cases}2x=3-\lambda\\y=-\lambda\end{cases}\qquad\begin{cases}-\lambda=2x-3\\y=-\lambda\end{cases}$$

$$y=2x-3$$

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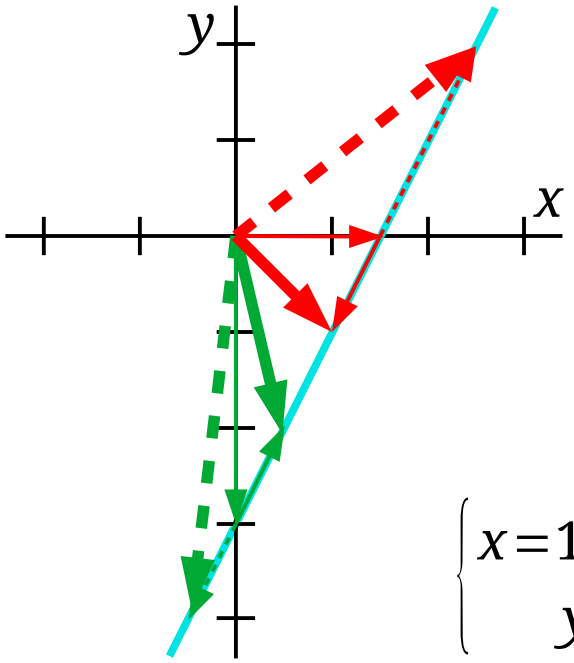
$$\begin{cases}x=0.5\lambda\\y=-3+\lambda\end{cases}\qquad\begin{cases}2x=\lambda\\y=-3+\lambda\end{cases}$$



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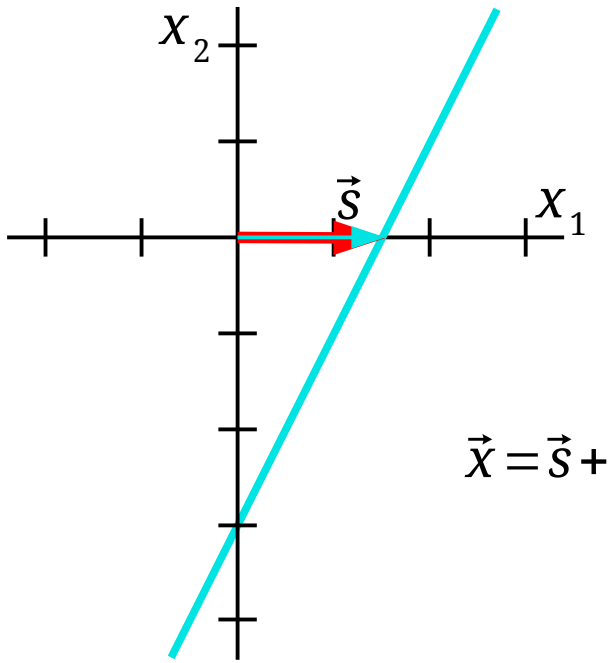
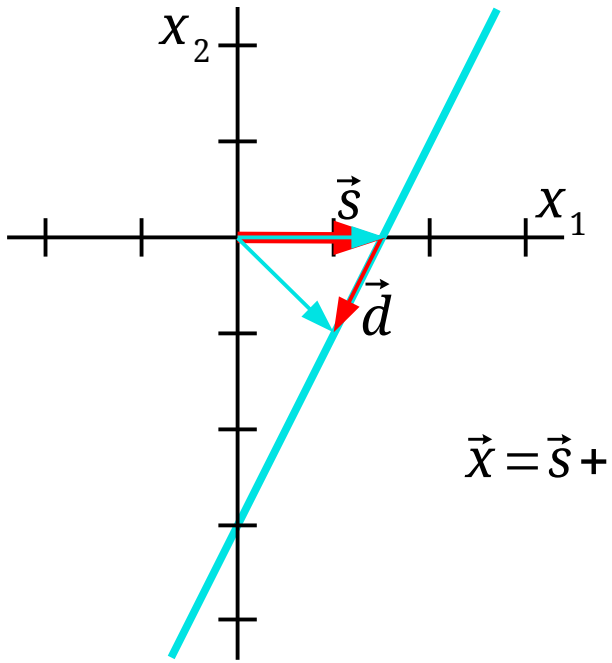


$$\vec{x} = \vec{s} + \lambda \vec{d}$$



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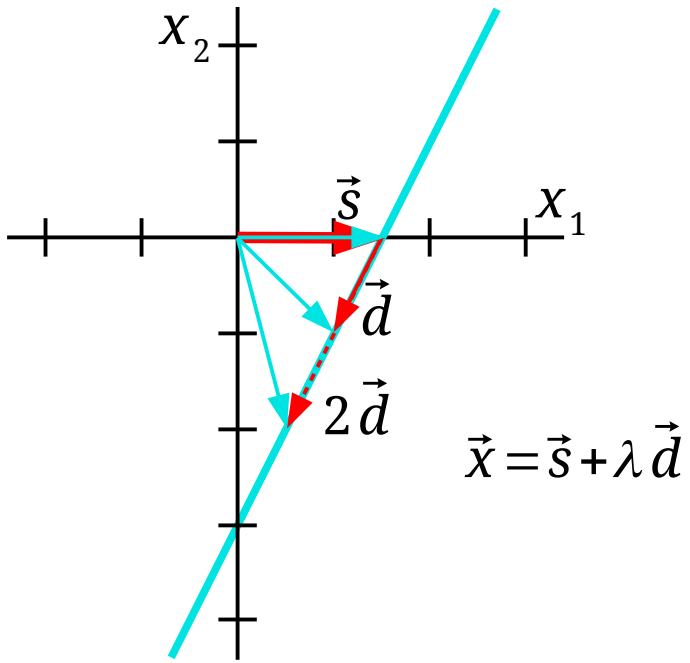

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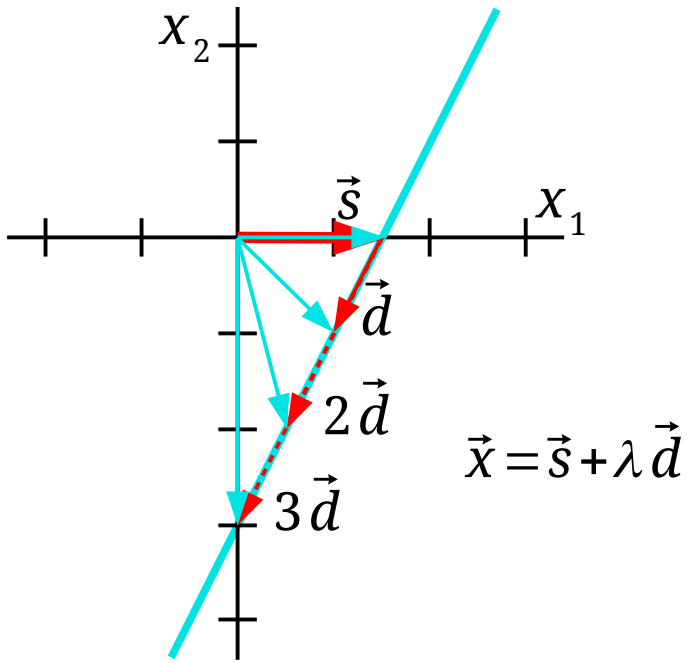

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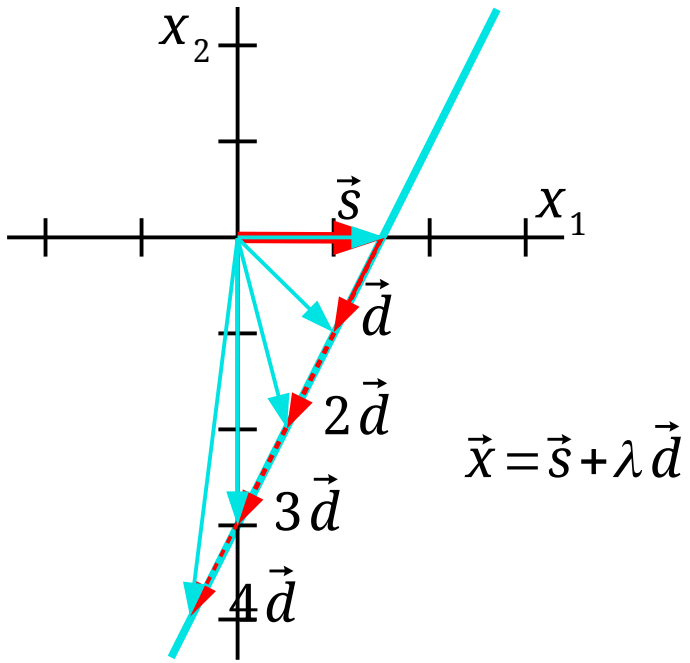

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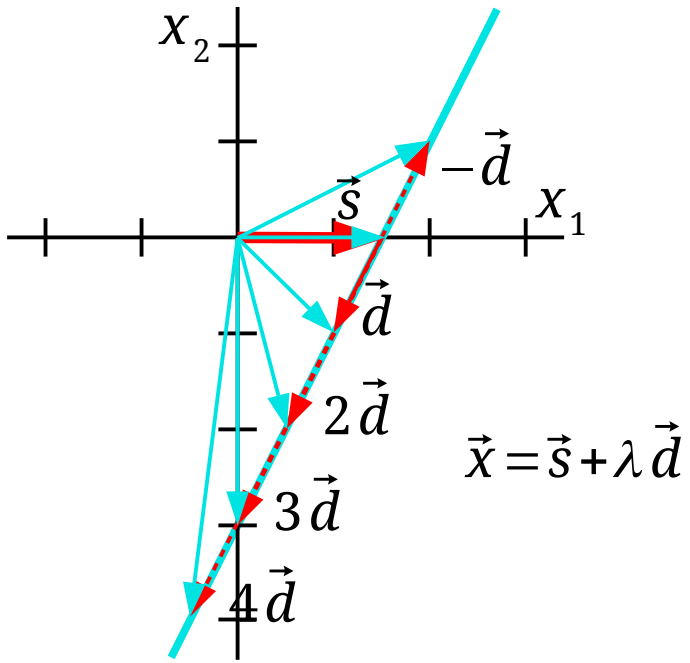
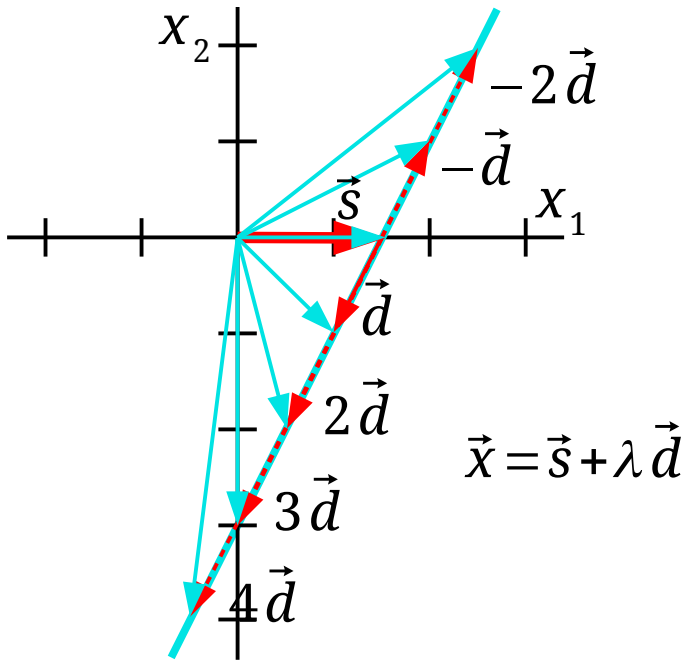
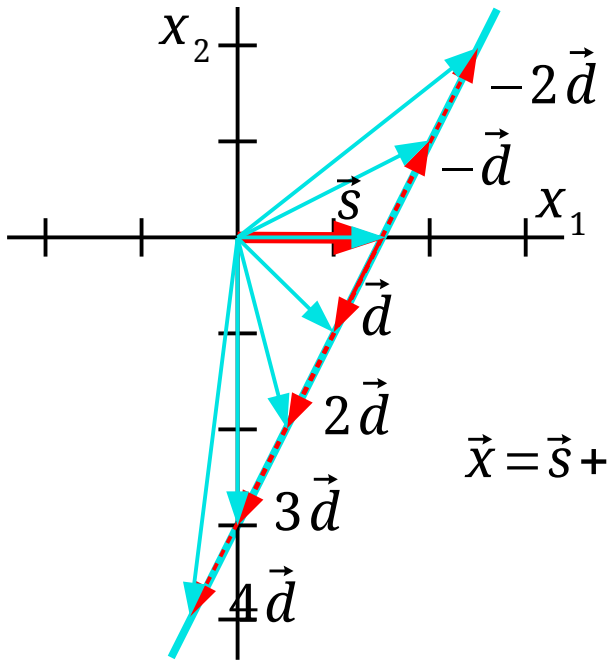


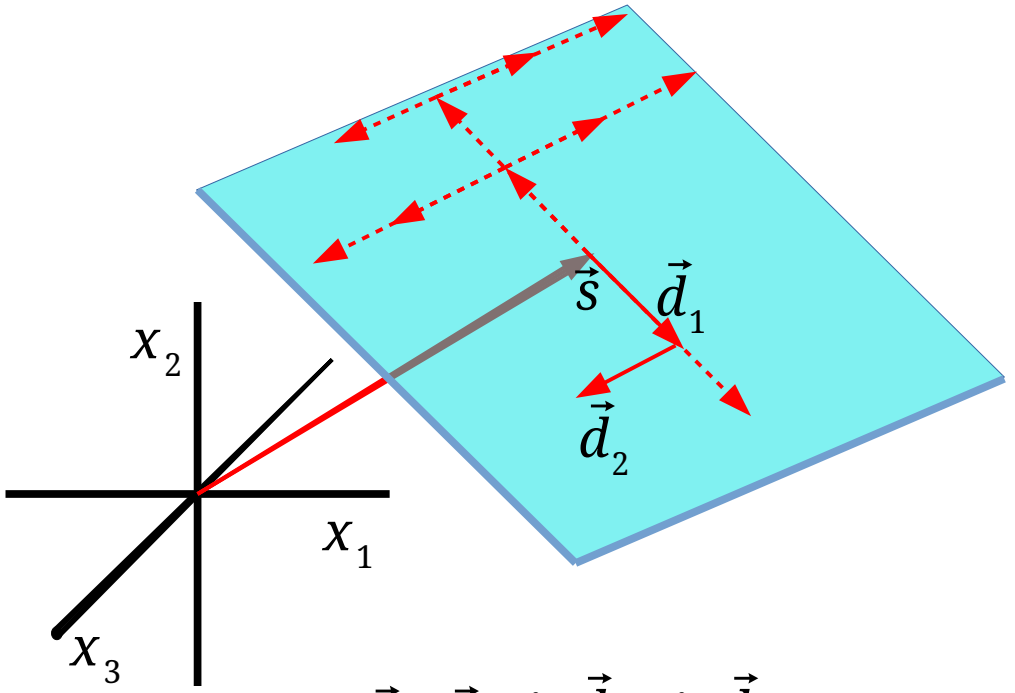
$$\vec{x} = \vec{s} + \lambda \vec{d}$$



$$\vec{x} = \vec{s} + \lambda \vec{d}$$



$$\vec{x} = \vec{s} + \lambda \vec{d}$$



$$\vec{x} = \vec{s} + \lambda_1 \vec{d}_1 + \lambda_2 \vec{d}_2$$