

Worked Examples – How to show SUBTRACTION of integers using **take-away**, with **manipulatives**

Model using chips. Use pictures and words. Write a number sentence that includes the sum or difference.

a) $2 - 5$

Put +2 on the work mat.
Put 3 neutral pairs on the work mat.
Take away +5.
 $2 - 5 = -3$

d) $-5 - (-2)$

Put -5 on the work mat.
Take away -2
 $-5 - (-2) = -3$

b) $6 - 4$

Put +6 on the work mat
Take away +4.
 $6 - 4 = 2$

e) $-5 - (-7)$

Put -5 on the work mat.
Put 2 neutral pairs on the work mat.
Take away -7
 $-5 - (-7) = 2$

c) $-7 - 4$

Put -7 on the work mat
Put 4 neutral pairs on the work mat.
Take away +4
 $7 - 4 = -11$

f) $-7 + (-4)$

← addition!
Put -7 on the work mat.
Put -4 on the work mat.
Push them together.
 $-7 + (-4) = -11$

← Same answer, but different process ←

Rules for Adding and Subtracting Integers with Manipulatives

Definitions:

- Add means join. This means put the two addends on the work mat and *push them together*.
- Subtract means take-away. For $a - b$, you put a on the work mat and *take-away* b . Take-away means remove from the work mat. Note that you might take-away a positive or you might take-away a negative¹.

Two rules are important:

- You may remove a *neutral pair* at any time. That is, if you have a -1 and +1, these can be removed. This is important when you want to simplify to get the answer.
- You may introduce *neutral pairs* as often as you wish. That is, if you may put -1 and +1 on the work mat anytime. This is important when you want to *take-away* something you do not yet have on the work mat.