EXAMPLE | What is the weight of the slumberbee below?

We can find an object's weight with a balance scale.
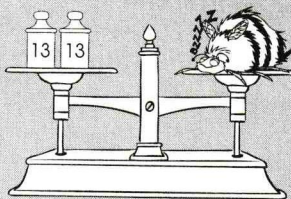
The slumberbee is balanced with two 13-gram weights.

So, this slumberbee weighs $13+13 = $ **26 grams**.

PRACTICE

96. Alex balances an elefinch with fifteen 7-gram weights. What is the weight of the elefinch?

96. _____

97. Grogg balances a 60-gram pandakeet using only 5-gram weights. How many weights does he use?

97. _____

98. Ralph balances a 85-gram pandakeet using only 5-gram weights. How many weights does he use?

98. _____

99. Lizzie balances a 27-gram octapug using only 3-gram weights. How many weights does she use?

99. _____

100. How many **more** 3-gram weights will Lizzie need to balance a 66-gram octapug than she needs to balance a 45-gram octapug?

100. _____

PRACTICE

101. Can you balance 15 grams using only 3-gram weights?
If so, how many would you need? If not, why not?

102. Can you balance 27 grams using only 4-gram weights?
If so, how many would you need? If not, why not?

103. How many weights would you need to balance 18 grams using
only 8-gram weights and 5-gram weights?

103. _____

104. How many weights would you need to balance 39 grams using
only 11-gram and 7-gram weights?

104. _____

105. What is the *smallest* number of weights you could use to
balance 40 grams using only 4-gram and 9-gram weights?

105. _____

106. What is the *smallest* number of weights you would need to
balance 44 grams using only 3-gram and 7-gram weights?

106. _____

Beast Academy Practice 3A

EXAMPLE

What is the largest number of grams that *cannot* be balanced with only 6-gram and 11-gram weights?

Using a chart with rows of 11 makes it easier to find all the weights we can balance.

We make a chart with rows of 11 and shade in the weights that we can balance:

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33
34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55
56	57	58	59	60	61	62	63	64	65	66

The largest weight we cannot balance is **49 grams**.

PRACTICE

107. How many different weights *cannot* be balanced with only 2-gram and 13-gram weights?

107. _____

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49	50	51	52

108. What is the largest number of grams that *cannot* be balanced with only 3-gram and 7-gram weights?

108. _____

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	32	33	34	35

In the problems below, it may help to draw a chart like those on the previous page.

109. ★ What is the largest number of grams that ***cannot*** be balanced with only 5-gram and 7-gram weights?

109. _____

110. ★ What is the largest number of grams that ***cannot*** be balanced with only 4-gram and 9-gram weights?

110. _____

111. What is the largest number of grams that **cannot** be balanced with
★ only 3-gram and 8-gram weights?

111. _____

112. Is there a largest number of grams that cannot be balanced with only
★ 4-gram and 6-gram weights? If so, what is it? If not, explain why not.