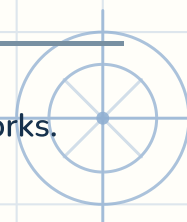


Balance puzzles — Up to 70 coins

Name: _____

Date: _____



Show what you would weigh each time, and how you know nothing shorter works.

- 1 7 coins look identical. One is fake and slightly lighter than the rest.

What is the fewest weighings that are certain to find the fake?

Weighings Coins still suspect after each weighing: $7 \rightarrow 3$, then weigh two of the last three — the lighter pan or the one left off. That is 2 weighings.

2

- 2 56 coins look identical. One is fake and slightly lighter than the rest.

What is the fewest weighings that are certain to find the fake?

Weighings

.....

.....

.....

- 3 10 coins look identical. One is fake and slightly heavier than the rest.

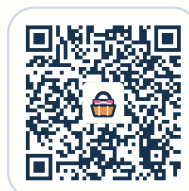
What is the fewest weighings that are certain to find the fake?

Weighings

.....

.....

.....



Balance puzzles · Up to 70 coins — Answer key

If they are stuck

- A balance can say three things, not two. What is the third?

1. Coins still suspect after each weighing: $7 \rightarrow 3$, then weigh two of the last three — the lighter pan or the one left off. That is 2 weighings.

3. Coins still suspect after each weighing: $10 \rightarrow 4 \rightarrow 2$, then weigh the last two — the heavier one is fake. That is 3 weighings.

2. Coins still suspect after each weighing: $56 \rightarrow 19 \rightarrow 7 \rightarrow 3$, then weigh two of the last three — the lighter pan or the one left off. That is 4 weighings.

