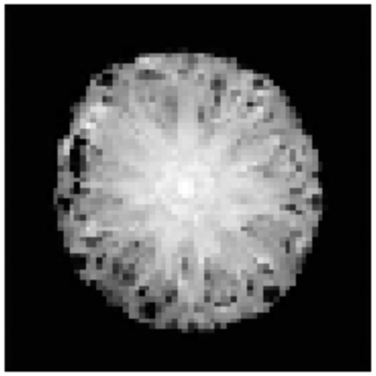
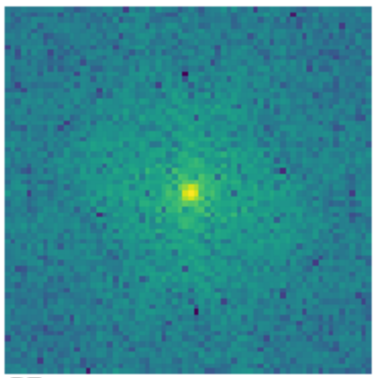
Match the K-space in the middle column to the image in the last column.
(Red points indicate the subsete of K-space that was sampled.)

Full-resolution image



Full-resolution k-space



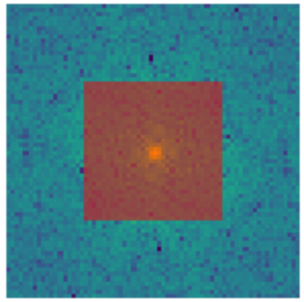
↑
RO

PE →

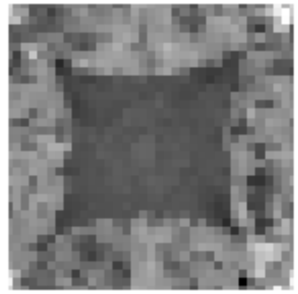
5. Which image used the strongest gradients?

6. Which image took the least time to acquire?

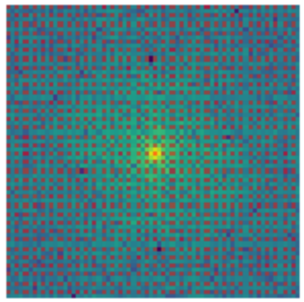
1.



A)

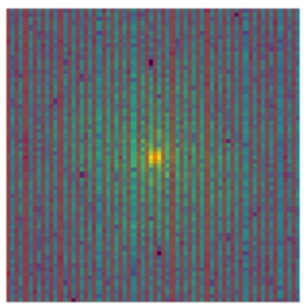


2.



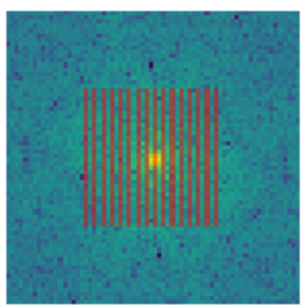
B)

3.

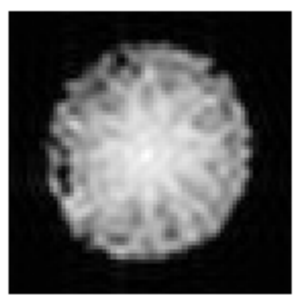


C)

4.



D)



1 → D. The high spatial frequency portions of k-space are not sampled, so the image is low resolution. But k-space is sampled densely, so the FOV is large.

2 → A. The coverage of k-space is large, so the resolution is good, but the sampling is sparse, so the FOV is small. Sampling is sparse in both directions, so aliasing happens in both directions: parts of the pineapple that were outside of the field of view come back into the image on the other side.

3 → C. K-Space coverage is large, so resolution is high, but k-space is under-sampled in one direction, so there is aliasing in one direction.

4 → B. K-space coverage is limited and sampling is sparse in one direction, so resolution is poor and aliasing happens in the under-sampled direction.

5. This one is actually no easy to answer. As a general rule, smaller FOVs require stronger gradients, because you're trying to move farther through k-space each time you write down a data point. However, you can also just leave the gradients alone and wait longer to move farther/faster in k-space. IF you kept the total acquisition time the same, you would need the strongest gradients for (3) because you're taking bigger k-space steps and going out farther.

6. As a general rule, the fewer data points you acquire, the faster you go. (4) has the fewest data points.