Showing how significant figures work

In the case of addition and subtraction we can best explain with an example. Suppose one object is measured to have a mass of 9.9 gm and a second object is measured on a different balance to have a mass of 0.3163 gm. What is the total mass? We write the numbers with question marks at places where we lack information. Thus 9.9???? gm and 0.3163? gm. Adding them with the decimal points lined up we see

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09.9????
00.3163?
10.2???? = 10.2 gm.
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In the case of multiplication or division we can use the same idea of unknown digits. Thus the product of 3.413? and 2.3? can be written in long hand as

```
3.413?
2.3?
   ?????
 10239?
 6826?
7.8????? = 7.8
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