# Learning Enhancement Team – Mathematics & Statistics

Pharmaceutical Calculations 2

## Conversions Between Strengths

1. Convert the following into the given unit
2. 1 in 200 into mg/ml
3. 1 in 400 into mg/ml
4. 1 in 25 into mg/ml
5. 1 in 1000 into %w/v
6. 1 in 500 into %w/v
7. 1 in 5000 into %w/v
8. 1:10000 into mg/ml
9. 1:250 into %w/v
10. 500 mg/ml into parts
11. 125 mg/ml into parts
12. 5% w/v into parts
13. 0.2% w/v into parts

## Calculations with Strengths

1. If 25 g of a chemical is dissolved in 100 ml, what is this expressed in parts?
2. If 80 g of a chemical is dissolved in 400 ml, what is this expressed in parts?
3. If 500 mg of a chemical is dissolved in 200 ml, what is this expressed in %w/v?
4. If 1200 mg of a chemical is dissolved in 1 l, what is this expressed in %w/v?
5. If a formula is described as 1:500, how may ml are required to provide a dose of 25 mg?
6. If a formula is described as 1:2000, how many ml are required to provide a dose of 100 mg?
7. If a formula is 2% w/v, how many ml are required to provide a dose of 50 mg?
8. If a formula is 10% w/v, how many ml are required to provide a dose of 40 mg?
9. If 200 ml of water is added to 800 ml of a 1 in 200 solution, what is the final strength:
10. Expressed in parts?
11. Expressed in %w/v?
12. If 50 ml of water is added to 200 ml of a 1:400 solution, what is the final strength:
13. Expressed in parts?
14. Expressed in %w/v?
15. If 500 ml of water is added to 2 l of a 20% w/v solution, what is the final strength expressed as %w/v?
16. If 400 ml of water is added to 1 l of a 14% w/v solution, what is the final strength expressed as %w/v?

## Dilutions

1. If you have stock of a medication that is given as 1 in 100, and you need to create 40 ml of a 1 in 200 solution, how many ml do you need to take from the concentrate?
2. If you have a stock of medication that has strength 1 in 200, and you want to make 100 ml of a 1 in 1000 solution, how many ml do you need to take from the concentrate?
3. If you want to make 200 ml of a medication that is 5% v/v, and you have stock medication that is 25% v/v, how much of the stock would you take?
4. How much of a 5 molar solution is required to produce 200 ml of a 1 molar solution?
5. How much of a 4 molar solution is required to produce 500 ml of a 500 millimolar solution?
6. If 100 ml of compound X in a 4 molar solution is required to react completely with 20 ml of compound Y, what is the strength of compound Y’s solution, assuming the reaction was 1X:1Y?
7. If 20 ml of compound X in a 2M solution is required to react completely with 4 ml of compound Y, what is the strength of compounds Y’s solution, if the reaction is 1X:1Y?
8. If 100 ml of compound X in a 5M solution is required to react completely with 20 ml of compound Y, what is the strength of compound Y’s solution if:
9. The reaction is 1X:1Y
10. The reaction is 1X:2Y
11. The reaction is 1X:5Y
12. The reaction is 2X:5Y
13. The reaction is 1X:0.5Y?