# Financial Math for Capital Markets – Math Warm-Up

## Part 1 – Exponents & Roots

Calculate the following:

1. 24 =
2. 5-2 =
3. 271/3 =

Simplify the following expressions (leave the answers in index form):

1. 24 x 23 =
2. 57 x 5-4 =
3. 94 / 93 =

## Part 2 – Percentages

1. The Head of Sales predicts a 10% rise in turnover this year from last year’s $120,000. What do they think the sales will be?
2. By what percentage is $190 greater than $145?
3. The current stock price of a company is $234. The price is expected to increase by 25% in the next year, increase by a further 20% in the following year and increase by 15% in the year after. Calculate the expected stock price in three years' time.
4. Three years ago, a stock index stood at 1,156.6. In the last three years, the index has increased by 18%, increased by 22.5%, and fallen by 14.5%. Calculate the overall % increase or reduction in the index over the three years.

## Part 3 – Solving Equations

Rearrange the following equations for x:

1. 6x – 2 = 5x + 1

x =

1. 3x – 8 = x + 2

x =

Rearrange the following equations so that b is a function of a:

1. a = 2 x (b + 5)

b =

1. a = b2 – 10

b =

# Math Warm-Up Solutions

## Part 1 – Exponents & Roots

Calculate the following:

1. 24 = **16**
2. 5-2 = 1/52 = **0.04**
3. 271/3 =

Simplify the following expressions (leave the answers in index form):

1. 24 x 23 = **27**
2. 57 x 5-4 = **53**
3. 95 / 93 = **92**

## Part 2 – Percentages

1. The Head of Sales predicts a 10% rise in turnover this year from last year’s $120,000. What do they think the sales will be?

**120,000 x (1 + 10%) = 132,000**

1. By what percentage is $190 greater than $145?

**(190 – 145) / 145 = 31.03%**

1. The current stock price of a company is $234. The price is expected to increase by 25% in the next year, increase by a further 20% in the following year and increase by 15% in the year after. Calculate the expected stock price in three years’ time.

**234 x (1 + 25%) x (1 + 20%) x (1 + 15%) = 403.65**

1. Three years ago, a stock index stood at 1,156.6. In the last three years, the index has increased by 18%, increased by 22.5%, and fallen by 14.5%. Calculate the overall % increase or reduction in the index over the three years.

**Stock index today = 1,156.6 x (1 + 18%) x (1 + 22.5%) x (1 – 14.5%) = 1,429.44**

**Overall increase = (1,429.44 – 1,156.6) / 1,156.6 = 23.6%**

## Part 3 – Solving Equations

Rearrange the following equations for x:

1. 6x – 2 = 5x + 1

**6x – 5x = 1 + 2**

**x = 3**

1. 3x – 8 = x + 2

**3x – x = 2 + 8**

**x = 5**

Rearrange the following equations so that b is a function of a:

1. a = 2 x (b + 5)

**b + 5 = a/2**

**b = a/2 - 5**

1. a = b2 – 10

**b2 = a + 10**

**b = (a + 10)1/2**