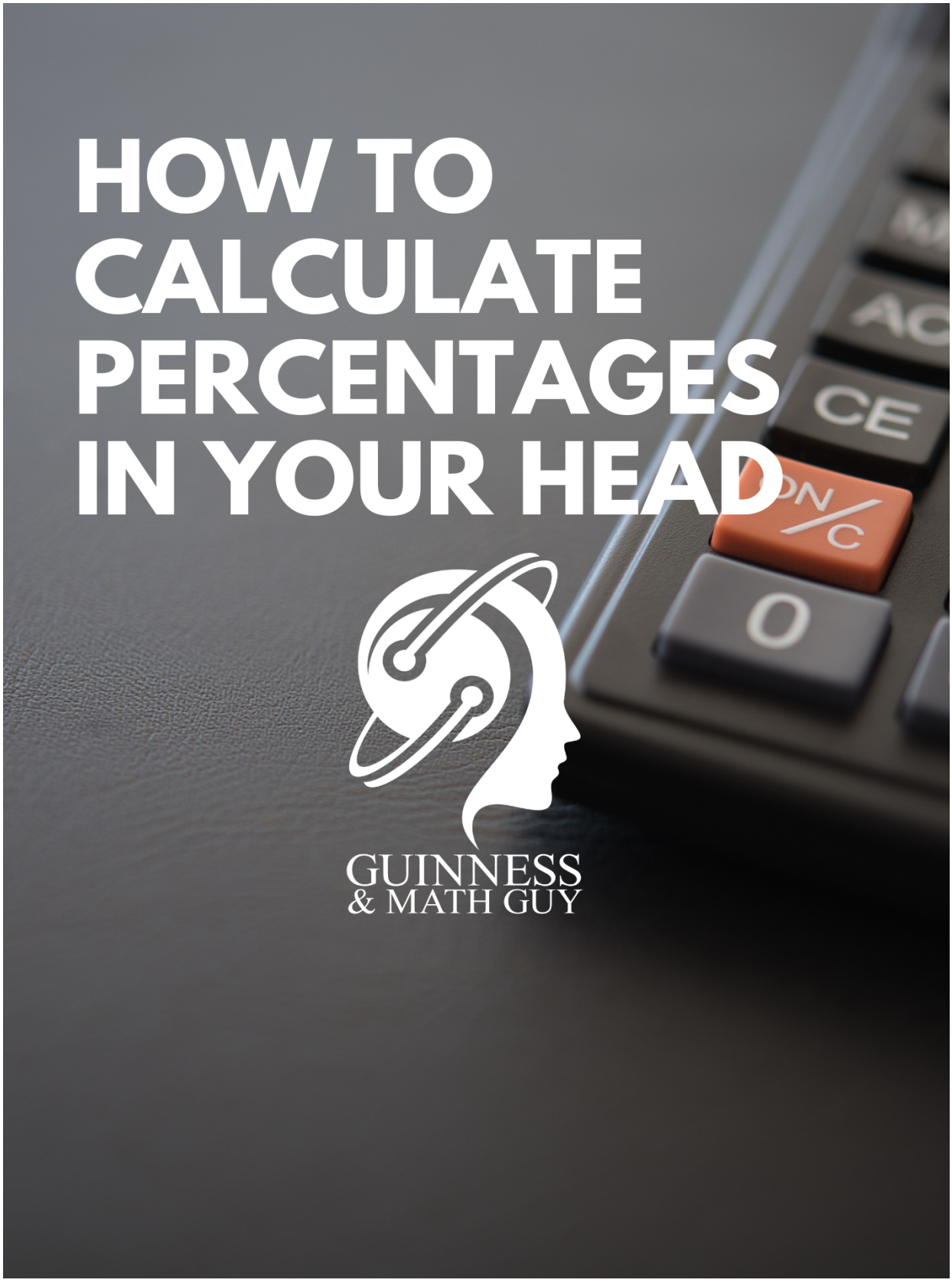
# HOW TO CALCULATE PERCENTAGES IN YOUR HEAD




GUINNESS & MATH GUY

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# How To Calculate Percentages In Your Head

Guinness And Math Guy

## Tool Kit

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### Took Kit Part A:

#### Doubling & Halving:

To calculate any percentage in your head, you should be very comfortable with doubling and halving any number in your head. Here's how to do it:

#### Doubling

To double 33, simply double each of the 3s to get 66.

Similarly, double of 42 is 84.

And to double 26, double 20 and 6 and add the two results.
Double of 20 is 40 and double of 6 is 12, so add 40 and 12 to get 52.
So, double 26 is 52.

And double of 35 is 70, because double of 30 is 60 and double of 5 is 10 and 60 + 10 is 70.

#### Halving

Halving is opposite of doubling.

So, half of 8 is 4.

And half of 60 is 30.

Also, half of 46 is 23 because we can halve the 4 and the 6 to get 2 and 3.

Half of 30 is 15, because two 15s add up to 30 (or by halving 20 and 10).

Half of 54 is 27 because 54 is 50 and 4.
Then halving 50 and 4 we get 25 and 2, which make 27.

Similarly, half of 78 = half of 70 + half of 8 = 35 + 4 = 39.

We can check our halving is correct by doubling our answer.
For example, if half of 78 is 39, then double of 39 should be 78.
And we can check that it is.

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## Tool Kit Part B

1. 10% and 1%
2. 50% and 25%
3. 5% and 0.5%
4. 2.5%

### 1. 10% and 1%

For the sake of simplicity, we'll take 640 as an example.

To find 10% of any number, just shift the decimal point one place to the left or if the number is ending with zero, like our example, then skip the zero.

So, 10% of 640 will be 64.

Similarly, to find 1% of 640, shift the decimal point two places to the left.

So, 1% of 640 will be 6.4.

### 2. 50% and 25%

50% of 640 means half of 640. And half of 640 is 320.

25% is just half of 50%. As we already know that 50% of 640 is 320, 25% will be half of 320.

Half of 320 = half of 300 + half of 20 = 150 + 10 = 160.

So, 25% of 640 is 160.

### 3. 5% and 0.5%

As 5% is half of 10%, to find 5% of any number, just find 10% as we learned before, and halve the result.

10% of 640 is 64 and half of 64 is 32.

So, 5% of 640 is 32.

Another easy way is, if you know 50% already, just shift the decimal point one place to the left and you'll get 5%.

We know from before that 50% of 640 is 320, shifting the decimal point one place to the left will give us 32. And we know that's true.

Similarly, to find 0.5% of any number, find 1% and halve the result.

1% of 640 is 6.4 and half of 6.4 is 3.2.

So, 0.5% of 640 is 3.2.

If we have already found 5% or 50% of a number, shifting the decimal point one place (if we have 5% already) to the left or two places (if we already have 50%) to the left will give us 0.5% of that number.

50% of 640 is 320 and shifting decimal point two places to the left will give us 0.5% of 640 = 3.2

5% of 640 is 32 and shifting decimal point one place to the left will give us 0.5% of 640 = 3.2

4. **Finding 2.5%**

Finding 2.5% of a number is easy. Find 5%, and take half of the result.

We know from before that 5% of 640 is 32 and half of 32 is 16.

So, 2.5% of 640 is 16.

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## Using The Tools

Now that we know how to double or halve a number quickly and how to calculate 0.5%, 1%, 2.5%, 5%, and 10% of any number easily, let's use these tools to find any percent of any number. Math is all practice, let's find a few percentages of our example 640.

### Tip 1

Try to use doubling and adding and only use halving and subtracting when you have to.

### Tip 2

Try every question on paper first. Then try to do it mentally. Then see my explanation.

### Practice Exercise

Find the following percentages of 640:

| | | | |
|---|---|---|---|
| 1. 75% | 2. 35% | 3. 51% | 4. 36% |
| 5. 45% | 6. 86% | 7. 25.5% | 8. 37.5% |

### Solutions

1. **75% of 640:**

(75% = 50% + 25%)

What's happening in your mind:

50% of 640 = half of 640 = 320
Keep 320 in mind.
25% of 640 = half of 50% of 640 = half of 320 = 160
75% = 50% + 25% = 320 + 160 = 480

So, 75% of 640 = 480 (Answer)

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2. **35% of 640:**

(35% = 20% + 10% + 5%)

10% of 640 = 64
Keep 64 in mind.
20% is double of 10% → double of 64 = 128
30% = 20% + 10% → 128 + 64 = 128 + 64 = 192 (you can do 120 + 60 + 12)
Keep 192 in mind. Forget about 64.
Now, 5% = half of 10% → half of 64 = 32
35% = 30% + 5% → 192 + 32 = 224 (you can do 190 + 30 + 4)

So, 35% of 640 = 224 (Answer)

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3. **51% of 640:**

(51% = 50% + 1%)

50% of 640 = half of 640 = 320
Keep 320 in mind while doing the next calculation.
1% of 640 = 6.4
51% = 50% + 1% → 320 + 6.4 = 326.4 (you can do 320 + 6 + .4)

So, 51% of 640 = 326.4 (Answer)

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4. **36% of 640:**

(36% = 20% + 10% + 5% + 1%)

We already have 35% of 640 = 224
1% of 640 = 6.4
36% = 35% + 1% → 224 + 6.4 = 230.4 (you can do 220 + 10 + .4)

So, 36% of 640 = 230.4 (Answer)

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5. **45% of 640:**

(45% = 50% – 5%)

50% of 640 = 320
Keep 320 in mind.

5% → shift the decimal point one place to the left in 50% → 320 → 32
45% = 50% – 5% → 320 – 32 = 288 (you can do 320 – 30 – 2)

So, 45% of 640 = 288 (Answer)

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6. **86% of 640:**

(86% = 80% + 5% + 1%)
(to get 80%, double 10% three times, 10% → 20% → 40% → 80%)

10% of 640 = 64
Keep 64 in mind.
20% = double of 10% → double of 64 = 128
Now keep 128 in mind. Forget about 64.
40% = double of 20% → double of 128 = 256 (double of 120 + double of 8)
Now, keep 256 in mind. Forget about 128.
80% = double of 40% → double of 256 = 512 (double of 250 + double of 6)
Now, keep 512 in mind. Forget about 256.
5% = half of 10% → half of 64 = 32
85% = 80% + 5% → 512 + 32 = 544 (you can do 510 + 30 + 4)
Now, keep 544 in mind.
1% of 640 = 6.4
86% = 85% + 1% → 544 + 6.4 = 550.4 (you can do 540 + 10 + .4)

So, 86% of 640 = 550.4 (Answer)

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Note: It seems long, time taking, and intimidating in the beginning. But believe me, it's only when you are explaining to someone. When you try to do it mentally as I have suggested, it becomes as easy as breathing after a little practice. And you start calculating in your head and getting the answers right before you know it.

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7. **25.5% of 640:**

(25.5% = 25% + 0.5%)

50% of 640 = 320
Keep 320 in mind.

25% = half of 50% → half of 320 = 160
Now keep 160 in mind. Forget about 320.
0.5% = half of 1% → half of 6.4 = 3.2
25.5% = 25% + 0.5% → 160 + 3.2 = 163.2

So, 25.5% of 640 = 163.2 (Answer)

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**8. 37.5% of 640:**

(37.5% = 25% + 12.5%)
OR (37.5% = 25% + 10% + 2.5%)
OR (37.5% = 20% + 10% + 5% + 2.5%)

25% = half of 50% → half of 320 = 160
Keep 160 in mind.
12.5% = half of 25% → half of 160 = 80
37.5% = 25% + 12.5% → 160 + 80 = 240

So, 37.5% of 640 = 240 (Answer)

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