

# PAYE income tax calculator for England, Northern Ireland and Wales

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<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Estimating Income Tax</b>	<b>2</b>
2.1	Income up to the Personal Allowance . . . . .	2
2.2	Income above the Personal Allowance . . . . .	3
2.3	Income above the basic rate band . . . . .	5
2.4	Income above the Personal Allowance limit . . . . .	5
2.5	Income above the higher rate band . . . . .	6
2.6	Income with a pay adjustment . . . . .	7
<b>3</b>	<b>Calculating a Bespoke Personal Allowance or Pay Adjustment</b>	<b>8</b>
3.1	Calculating an <i>exact</i> Personal Allowance . . . . .	8
3.2	Calculating a <i>rounded</i> Personal Allowance . . . . .	9
3.3	Calculating a Pay Adjustment . . . . .	11

## 1 Introduction

`incometax()` estimates income tax payable on PAYE income in England, Northern Ireland and Wales, and is intended to replicate the estimates of GOV.UK [Estimate your Income Tax for the current year](#)<sup>1</sup>.

Tax is paid on the amount of taxable income remaining after the [Personal Allowance](#) has been deducted, and is allocated among the *basic*, *higher* and *additional* rates. After deduction of the Personal Allowance, if any (see below): income up to and including the upper limit of the basic rate band attracts *basic rate* tax; income exceeding the basic rate band by an

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<sup>1</sup>`incometax()` does not currently calculate *National Insurance* (NI) contributions, and should therefore return values equal to the estimates from the GOV.UK website with “yes” as the answer to the question ‘Are you over the State Pension age?’ For NI information see: [Rates and allowances: National Insurance contributions](#).

amount up to and including the upper limit of the higher rate band attracts *higher rate* tax; and income exceeding the sum of the basic and higher rate bands attracts *additional rate* tax.

The [standard Personal Allowance](#) is the amount of annual taxable income on which there is no tax liability, currently £12,570. The standard Personal Allowance goes down by £1 for every £2 that [adjusted net income](#) is above an upper threshold, currently £100,000. This means the standard Personal Allowance is zero if annual taxable income is £125,140 or above.

Hence currently in 2026: –

- annual taxable income after allowances—e.g., the standard Personal Allowance of £12,570—up to £37,700 attracts 20% basic rate income tax<sup>2</sup>;
- annual taxable income after allowances between £37,701 and £125,139 attracts 40% higher rate income tax—noting that the standard Personal Allowance is reduced above £100,000;
- annual taxable income after allowances above £125,139 attracts 45% additional rate income tax—noting there is no standard Personal Allowance at or above £125,140<sup>3</sup>.

See GOV.UK [Income Tax rates and allowances: Tax rates and bands](#).

A bespoke Personal Allowance may be specified using `incometax()` argument `allowance`. When negative, this argument specifies a [K code pay adjustment](#); otherwise, the standard Personal Allowance will be calculated using `pers_allow(income, opts)`.

## 2 Estimating Income Tax

### 2.1 Income up to the Personal Allowance

Annual income less or equal to the standard Personal Allowance of £12,570 is not taxed: –

```
> incometax(12570)
```

```
Rate:  20% 40% 45%
Tax:    £0  £0  £0
Total Income Tax:    £0
Personal Allowance: £12,570
Taxable Income:      £0
```

Specifying the standard Personal Allowance explicitly is identical: –

```
> all.equal(incometax(12570), incometax(12570, 12570))
```

```
[1] TRUE
```

---

<sup>2</sup>In practice, an additional £9 annual income is allowed before basic and higher rate tax is applied.

<sup>3</sup>In practice, an additional £6 annual income is allowed before additional rate tax is applied; the additional £6 is decreased by £1 for every further £2 increase in income beyond £125,146.

In practice, although shown as "Taxable Income"<sup>4</sup>, an additional £9 income is allowed before tax is applied: –

```
> incometax(12579)

Rate:  20% 40% 45%
Tax:    £0  £0  £0
Total Income Tax:    £0
Personal Allowance: £12,570
Taxable Income:      £9

> all.equal(incometax(12579), incometax(12579, 12570))

[1] TRUE
```

## 2.2 Income above the Personal Allowance

Annual income above the £12,570 standard Personal Allowance plus the additional £9 attracts 20% basic rate tax. For instance, at an annual income of £13,579, while "Taxable Income" is shown as £1,009, only £1,000 is actually taxed: –

```
> incometax(13579)

Rate:  20% 40% 45%
Tax:    £200  £0  £0
Total Income Tax:    £200
Personal Allowance: £12,570
Taxable Income:      £1,009
```

At an annual income of £6,009 and with a bespoke Personal Allowance specified using `allowance = 5000` as the second argument of `incometax()`, again while "Taxable Income" is shown as £1,009, only £1,000 is actually taxed: –

```
> incometax(6009, 5000)

Rate:  20% 40% 45%
Tax:    £200  £0  £0
Total Income Tax:    £200
Personal Allowance: £5,000
Taxable Income:      £1,009
```

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<sup>4</sup>For consistency with GOV.UK [Estimate your Income Tax for the current year](#)

With no Personal Allowance, an annual income of £1,009 is taxed similarly: –

```
> incometax(1009, 0)
```

Rate:	20%	40%	45%
Tax:	£200	£0	£0
Total Income Tax:	£200		
Personal Allowance:	£0		
Taxable Income:	£1,009		

Annual income above the Personal Allowance attracts 20% basic rate tax up to the basic rate band limit of £37,700, at which basic rate tax reaches a maximum of £7,540: –

```
> incometax(12579 + 37700)
```

Rate:	20%	40%	45%
Tax:	£7,540	£0	£0
Total Income Tax:	£7,540		
Personal Allowance:	£12,570		
Taxable Income:	£37,709		

```
> incometax(5009 + 37700, 5000)
```

Rate:	20%	40%	45%
Tax:	£7,540	£0	£0
Total Income Tax:	£7,540		
Personal Allowance:	£5,000		
Taxable Income:	£37,709		

```
> incometax(9 + 37700, 0)
```

Rate:	20%	40%	45%
Tax:	£7,540	£0	£0
Total Income Tax:	£7,540		
Personal Allowance:	£0		
Taxable Income:	£37,709		

## 2.3 Income above the basic rate band

Annual income above the £12,570 standard Personal Allowance plus the £37,700 basic rate band and the additional £9 (total £50,279) attracts 40% higher rate tax. For instance, at an annual income of £51,279, while "Taxable Income" is shown as £38,709, only £38,700 is actually taxed; £37,700 at the 20% basic rate and £1,000 at the 40% higher rate: –

```
> incometax(51279)
```

Rate:	20%	40%	45%
Tax:	£7,540	£400	£0
Total Income Tax:	£7,940		
Personal Allowance:	£12,570		
Taxable Income:	£38,709		

An annual income of £43,709 i.e., £1,000 above a bespoke Personal Allowance of £5,000 plus the £37,700 basic rate band and the additional £9 (total £42,709) similarly attracts 40% higher rate tax; again, while "Taxable Income" is shown as £38,709, only £38,700 is actually taxed: –

```
> incometax(43709, 5000)
```

Rate:	20%	40%	45%
Tax:	£7,540	£400	£0
Total Income Tax:	£7,940		
Personal Allowance:	£5,000		
Taxable Income:	£38,709		

With no Personal Allowance, an annual income of £38,709 is taxed similarly: –

```
> incometax(38709, 0)
```

Rate:	20%	40%	45%
Tax:	£7,540	£400	£0
Total Income Tax:	£7,940		
Personal Allowance:	£0		
Taxable Income:	£38,709		

## 2.4 Income above the Personal Allowance limit

The standard Personal Allowance applies to annual income up to an upper limit of £100,000: –

```
> incometax(100000)
```

Rate:	20%	40%	45%
Tax:	£7,540	£19,888.4	£0
Total Income Tax:	£27,428.4		
Personal Allowance:	£12,570		
Taxable Income:	£87,430		

For every £2 of income above this £100,000 limit, the Personal Allowance decreases by £1: –

> *incometax*(104000)

Rate:	20%	40%	45%
Tax:	£7,540	£22,288.4	£0
Total Income Tax:	£29,828.4		
Personal Allowance:	£10,570		
Taxable Income:	£93,430		

> *incometax*(120000)

Rate:	20%	40%	45%
Tax:	£7,540	£31,888.4	£0
Total Income Tax:	£39,428.4		
Personal Allowance:	£2,570		
Taxable Income:	£117,430		

Hence, at an annual income of £125,140, Personal Allowance is zero: –

> *incometax*(125140)

Rate:	20%	40%	45%
Tax:	£7,540	£34,972.4	£0
Total Income Tax:	£42,512.4		
Personal Allowance:	£0		
Taxable Income:	£125,140		

## 2.5 Income above the higher rate band

Annual income more than £6 above the sum of the basic and higher rate bands (£125,139), i.e., above £125,145, attracts additional rate tax: –

> *incometax*(125139 + 6)

Rate:	20%	40%	45%
Tax:	£7,540	£34,975.4	£0
Total Income Tax:	£42,515.4		
Personal Allowance:	£0		
Taxable Income:	£125,145		

> *incometax*(125139 + 6 + 1)

Rate:	20%	40%	45%
Tax:	£7,540	£34,975.6	£0.45
Total Income Tax:	£42,516.05		
Personal Allowance:	£0		
Taxable Income:	£125,146		

The allowance of £6 before additional rate tax is applied goes down by £1 for every £2 of income beyond £125,146: –

```
> incometax(125139 + 4 + 7)
```

Rate:	20%	40%	45%
Tax:	£7,540	£34,975.6	£3.15
Total Income Tax:	£42,518.75		
Personal Allowance:	£0		
Taxable Income:	£125,150		

```
> 7 * 0.45
```

```
[1] 3.15
```

Annual income more than £18 above £125,139 attracts the full amount of additional rate tax: –

```
> incometax(125139 + 19)
```

Rate:	20%	40%	45%
Tax:	£7,540	£34,975.6	£8.55
Total Income Tax:	£42,524.15		
Personal Allowance:	£0		
Taxable Income:	£125,158		

```
> 19 * 0.45
```

```
[1] 8.55
```

```
> incometax(125139 + 10000)
```

Rate:	20%	40%	45%
Tax:	£7,540	£34,975.6	£4,500
Total Income Tax:	£47,015.6		
Personal Allowance:	£0		
Taxable Income:	£135,139		

## 2.6 Income with a pay adjustment

Specifying a [K code pay adjustment](#) using a negative value for argument `allowance`: –

```
> incometax(125139, -10000)
```

Rate:	20%	40%	45%
Tax:	£7,540	£34,975.6	£4,500
Total Income Tax:	£47,015.6		
Pay adjustment:	£10,000		
Personal Allowance:	£0		
Adjusted Taxable:	£135,139		

In this last example the result is equivalent to that obtained by adding the value of the pay adjustment to argument `income` (viz. the penultimate example): –

```
> all.equal(incometax(125139, -10000), incometax(125139 + 10000), check.attributes = FALSE)

[1] TRUE
```

However, that equivalence may not always be the case: –

```
> incometax(100000, -1000)

Rate:      20%      40%      45%
Tax:      £7,540 £25,320      £0
Total Income Tax:      £32,860
Pay adjustment:      £1,000
Personal Allowance: £0
Adjusted Taxable:      £101,000
```

```
> incometax(100000 + 1000)

Rate:      20%      40%      45%
Tax:      £7,540 £20,488.4      £0
Total Income Tax:      £28,028.4
Personal Allowance: £12,070
Taxable Income:      £88,930
```

## 3 Calculating a Bespoke Personal Allowance or Pay Adjustment

### 3.1 Calculating an *exact* Personal Allowance

The *exact* Personal Allowance required to recoup a given tax deficit may be calculated using `allowance()` with its third argument `round10 = FALSE`. For example, at an annual income of £10,000 i.e., below the £12,570 standard Personal Allowance and not usually attracting any income tax, the Personal Allowance required to recoup a tax deficit of £600 is: –

```
> allowance(10000, 600, FALSE)

[1] 6991
```

As intended using this Personal Allowance, an *exact* total of £600 income tax is recouped: –

```
> incometax(10000, 6991)

Rate:  20%  40%  45%
Tax:   £600  £0  £0
Total Income Tax:   £600
Personal Allowance: £6,991
Taxable Income:     £3,009
```



### 3.2 Calculating a *rounded* Personal Allowance

In practice, this deficit would be recouped through use of a tax code in which the last digit of the required Personal Allowance is replaced with the letter L e.g., in the previous example 699L; see [What your tax code means](#). The corresponding Personal Allowance rounded down<sup>5</sup> to the nearest £10 is obtained using `allowance()` with its third argument `round10 = TRUE` (the default): –

```
> allowance(10000, 600)
```

```
[1] 6990
```

As intended using this Personal Allowance, a total of *at least* £600 income tax is recouped: –

```
> incometax(10000, 6990)
```

Rate:	20%	40%	45%
Tax:	£600.2	£0	£0
Total Income Tax:	£600.2		
Personal Allowance:	£6,990		
Taxable Income:	£3,010		

An annual income of £13,579 i.e., £1,009 above the £12,570 standard Personal Allowance, usually attracts £200 total income tax: –

```
> incometax(13579)
```

Rate:	20%	40%	45%
Tax:	£200	£0	£0
Total Income Tax:	£200		
Personal Allowance:	£12,570		
Taxable Income:	£1,009		

At this income, the Personal Allowance required to recoup an *additional* £600 tax deficit is: –

```
> allowance(13579, 200 + 600)
```

```
[1] 9570
```

---

<sup>5</sup>Rounding *down* the Personal Allowance ensures recoup of a sum of tax *not less than* that required.

As intended using this Personal Allowance, a total of *at least* £800 income tax is recouped i.e., an additional amount of at least £600: –

```
> incometax(13579, 9570)
```

Rate:	20%	40%	45%
Tax:	£800	£0	£0
Total Income Tax:	£800		
Personal Allowance:	£9,570		
Taxable Income:	£4,009		

At the standard Personal Allowance, an annual income of £51,279 i.e., £1,009 above the basic rate band, usually attracts £7,940 total income tax: –

```
> incometax(51279)
```

Rate:	20%	40%	45%
Tax:	£7,540	£400	£0
Total Income Tax:	£7,940		
Personal Allowance:	£12,570		
Taxable Income:	£38,709		

At this income, the Personal Allowance required to recoup an *additional* £1,200 tax deficit is: –

```
> allowance(51279, 7940 + 1200)
```

```
[1] 9570
```

As intended using this Personal Allowance, a total of *at least* £9,140 income tax is recouped i.e., an additional amount of at least £1,200: –

```
> incometax(51279, 9570)
```

Rate:	20%	40%	45%
Tax:	£7,540	£1,600	£0
Total Income Tax:	£9,140		
Personal Allowance:	£9,570		
Taxable Income:	£41,709		

### 3.3 Calculating a Pay Adjustment

A tax deficit too large to recoup through a reduction in Personal Allowance may instead be recouped using a [pay adjustment](#). For example, an annual income of £112,570, at which the standard Personal Allowance decreases by half to £6,285, usually attracts a total of £34,970.4 income tax: –

```
> incometax(112570)
```

Rate:	20%	40%	45%
Tax:	£7,540	£27,430.4	£0
Total Income Tax:	£34,970.4		
Personal Allowance:	£6,285		
Taxable Income:	£106,285		

At this income, even to remove the Personal Allowance entirely would be insufficient to recoup, say, an *additional* deficit of £3,500 tax i.e., a total of £38,470.4 income tax: –

```
> incometax(112570, 0)
```

Rate:	20%	40%	45%
Tax:	£7,540	£29,944.4	£0
Total Income Tax:	£37,484.4		
Personal Allowance:	£0		
Taxable Income:	£112,570		

Consequently, `allowance()` returns a negative value, indicating that a pay adjustment is required instead: –

```
> allowance(112570, 34970.4 + 3500)
```

```
[1] -2460
```

Passing a negative value as the second (`allowance`) argument of `incometax()` signifies a pay adjustment; taxable income is adjusted to £115,030 and as intended, a total of *at least* £38,470.4 income tax is recouped i.e., an additional amount of at least £3,500: –

```
> incometax(112570, -2460)
```

Rate:	20%	40%	45%
Tax:	£7,540	£30,932	£0
Total Income Tax:	£38,472		
Pay adjustment:	£2,460		
Personal Allowance:	£0		
Adjusted Taxable:	£115,030		