Retail maths, *made simple*

The numbers every buyer, merchandiser and founder uses each week: margin, discounts, sell-through, size curves and stock. Every formula comes with a worked example. UK prices include 20% VAT.

1 Margin

Margin is the share of the selling price (excluding VAT) that you keep after paying for the product. Always take VAT off first.

STEP 1 · TAKE OFF VAT

$$\text{Net retail} = \frac{\text{Retail inc VAT}}{1.2}$$

STEP 2 · MARGIN %

$$\text{Margin \%} = \frac{\text{Net retail} - \text{Cost}}{\text{Net retail}} \times 100$$

WORKED EXAMPLE · COST £40, RETAIL £120

- Net retail = £120 ÷ 1.2 = **£100**
- Cash margin = £100 − £40 = **£60**
- Margin % = £60 ÷ £100 = **60%**

SETTING A PRICE FROM A TARGET MARGIN

$$\text{Retail} = \text{Cost} \div (1 - \text{margin}) \times 1.2$$

£40 ÷ 0.4 = £100, × 1.2 = **£120**

Common mistake: working margin off the VAT-inclusive price. (£120 − £40) ÷ £120 = 66.7%, which overstates your margin by almost 7 points.

MEASURE	WHAT IT COMPARES	EXAMPLE
Margin	Profit as a % of the selling price	£60 ÷ £100 = **60%**
Mark-up	Profit as a % of the cost	£60 ÷ £40 = **150%**
Retail multiple	Retail inc VAT ÷ cost	£120 ÷ £40 = **3.0x**

In the UK, a 3.0x multiple gives a 60% margin and a 2.5x multiple gives 52%.

2 Discounts and markdowns

SALE PRICE AFTER A DISCOUNT

$$\text{Sale} = \text{Original} \times (1 - \text{discount \%})$$

£120 with 30% off = £120 × 0.7 = **£84**

WORK BACK TO THE ORIGINAL PRICE

$$\text{Original} = \frac{\text{Sale price}}{1 - \text{discount \%}}$$

£84 after 30% off = £84 ÷ 0.7 = **£120**

FIND THE % OFF

$$\text{Discount \%} = \frac{\text{Original} - \text{Sale}}{\text{Original}} \times 100$$

£120 to £84 = £36 ÷ £120 = **30%**

MARGIN AFTER A DISCOUNT

$$\text{New margin} = 1 - \frac{1 - \text{margin}}{1 - \text{discount}}$$

60% margin, 30% off = 1 − (0.4 ÷ 0.7) = **42.9%**

> **Common mistake:** adding the % back on. £84 × 1.3 = £109.20, which is wrong, because the 30% came off £120, not £84.

Margin left after a discount

DISCOUNT	FROM 55% MARGIN	FROM 60% MARGIN	FROM 65% MARGIN
10% off	50.0%	55.6%	61.1%
20% off	43.8%	50.0%	56.3%
25% off	40.0%	46.7%	53.3%
30% off	35.7%	42.9%	50.0%
40% off	25.0%	33.3%	41.7%
50% off	10.0%	20.0%	30.0%
60% off	−12.5%	0% break-even	12.5%
70% off	−50.0%	−33.3%	−16.7%

Break-even rule: a discount equal to your margin % takes you to zero. At a 60% margin, 60% off means you are selling at cost. A 30% markdown on that £120 style halves your cash margin, from £60 to £30.

3 Sell-through

The % of the stock you bought that has sold. It is the best single measure of whether you bought the right product in the right quantity. Check it weekly from launch.

SELL-THROUGH

$$\text{Sell-through \%} = \frac{\text{Units sold}}{\text{Units received}} \times 100$$

1,000 units received, 650 sold = **65%**

70%+

Buy more

Increase next time, and check whether to re-order now.

50–70%

About right

Hold the quantity.

Under 50%

Buy less

Cut next time, and plan the markdown early, not late.

WATCH FULL-PRICE SELL-THROUGH

80% sold sounds good, but not if half of it went at 40% off.

SELL-OUTS HIDE DEMAND

If medium sold out in week 4, you don't know how many more you could have sold. Treat it as stronger than its number.

4 Building a size curve

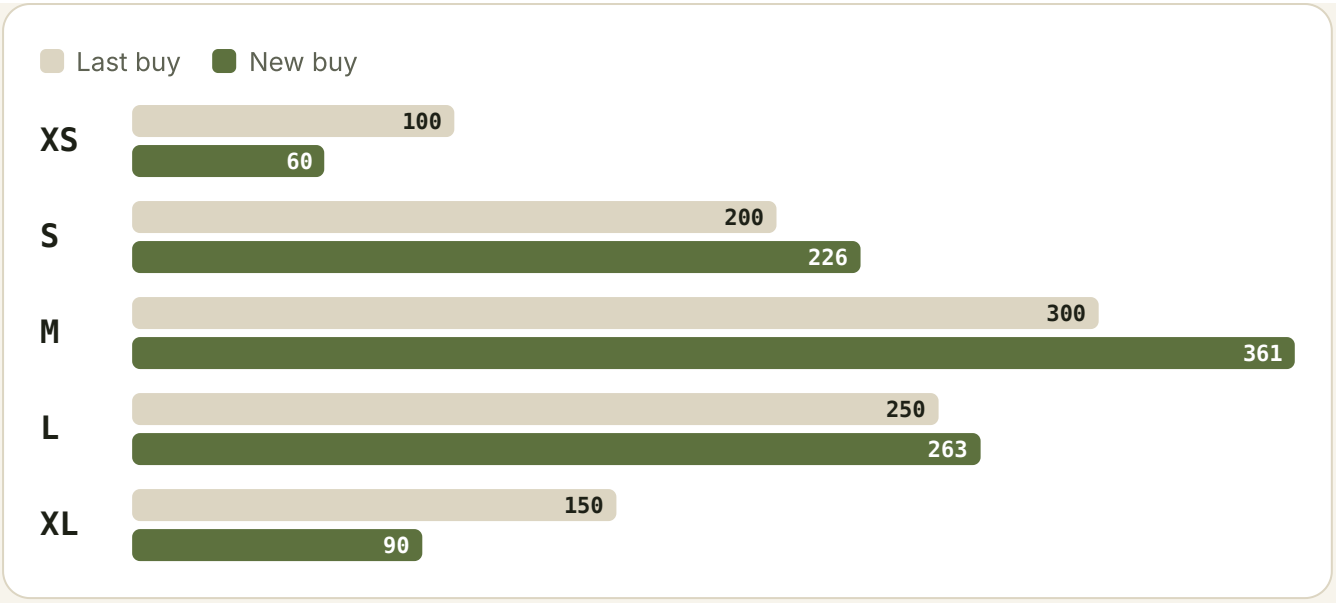
Split the new buy by what each size actually **sold**, not what you bought. Units move from slow sizes into fast ones, and the total stays the same.

NEW BUY PER SIZE

$$\text{New buy} = \frac{\text{Units sold in that size}}{\text{Total units sold}} \times \text{Total new buy}$$

Example: last season bought 1,000 units, buying 1,000 again

SIZE	LAST BUY	SOLD	SELL-THROUGH	SHARE OF SALES	NEW BUY	CHANGE
XS	100	40	40%	6%	**60**	−40
S	200	150	75%	23%	**226**	+26
M	300	240	80%	36%	**361**	+61
L	250	175	70%	26%	**263**	+13
XL	150	60	40%	9%	**90**	−60
Total	**1,000**	**665**	**66.5%**	**100%**	**1,000**	**0**



1. Sell-through per size

Sold ÷ bought for each size.

2. Share of sales

What slice of everything sold was each size? M sold 240 of the 665 units sold across all sizes: 240 ÷ 665 = 36%. Use units *sold*, not bought: sales show what customers wanted, the buy only shows last season's guess.

3. Apply to the new buy

Give each size the same slice of the new order. 36% of 1,000 = 361 units of M (361, not 360, because the unrounded share is 36.1%).

4. Round and check

Whole units that still add up to 1,000.

5. Check sell-through, then push

A size with very high sell-through probably ran short, so its share understates demand. Buy it above its share.

Result: if customers buy the same way again, every size sells through at about 66%, instead of ranging from 40% to 80%. Before you finalise, add 10–15% to sizes that sold out early, compare more than one season, and allow for fit: oversized styles sell smaller, slim fits sell bigger.

STEP 5 IN DETAIL · READ SELL-THROUGH BEFORE YOU FINALISE

Share of sales only measures what customers bought **from the stock you had**. If a size sold through very fast, it ran out and you lost sales you can't see, so the curve copies last season's shortage. Always read the sell-through column alongside the share.

- **80%+ or sold out early:** demand was capped by stock. Push it beyond its share. M sold through at 80%, so consider around **400** rather than 361.
- **60–80%:** healthy. Buy to its share.
- **Under 50%:** the share already cuts it back. Check it wasn't a fit or stock-timing issue before cutting harder.

Fund the extra units from the weakest sizes so the total stays the same: M at 400 (+39) could come from XS 60 → 45 and XL 90 → 66.

5 Small buys: splitting 8 units

The curve gives XS 0.5, S 1.8, M 2.9, L 2.1 and XL 0.7. You can't buy half a unit, so each size is a yes or no, and judgement decides.

A · Core sizes only

XS	S	M	L	XL
0	2	4	2	0

A trial style, or a fashion piece you won't re-order.

USUAL CHOICE

B · Core plus one end size

XS	S	M	L	XL
0	2	3	2	1

Follows the sales curve most closely.

C · Full size run

XS	S	M	L	XL
1	2	2	2	1

Online, where customers expect every size, or a hero style.

Test or proven?

Test styles go in core sizes. Proven styles can carry the full run.

How does it fit?

Oversized: shift a unit down a size. Slim fit: shift one up.

Can you re-order fast?

If yes, buy lean and re-order what sells. If not, buy the full run.

What does it cost to hold?

On an expensive style, one unsold XS eats most of the margin on another unit.

6 Other key figures

These show how fast stock sells, how hard your money works and how much you can still spend. The examples follow one brand selling £750k a year (ex VAT) at a 60% intake margin.

Speed · Money · Customer · Planning

SPEED

Rate of sale

```
Units sold ÷ weeks on sale
```

60 units in 4 weeks = **15 a week**. Compares styles fairly, whatever their launch date.

SPEED

Weeks cover

```
Stock on hand ÷ weekly rate of sale
```

120 ÷ 15 = **8 weeks**. Low means re-order. High means plan a markdown.

SPEED

Stock turn

```
Cost of goods sold ÷ average stock at cost
```

£360k ÷ £120k = **3 times a year**. Higher means less cash tied up.

MONEY

Intake vs achieved margin

```
Planned margin vs margin actually made
```

60% intake, **52% achieved**. The gap is the cost of markdowns.

MONEY

Markdown %

```
Markdown cost ÷ net sales
```

£75k ÷ £750k = **10%** of sales given away to clear stock.

MONEY

GMROI

```
Gross margin £ ÷ average stock at cost
```

£390k ÷ £120k = **£3.25** of margin for every £1 of stock.

CUSTOMER

Average transaction value

```
Sales ÷ number of orders
```

£30,000 ÷ 250 = **£120** per order.

CUSTOMER

Units per transaction

```
Units sold ÷ number of orders
```

400 ÷ 250 = **1.6**. Outfits or single pieces?

CUSTOMER

Conversion rate

```
Orders ÷ website sessions
```

250 ÷ 12,500 = **2%** of visitors buy.

CUSTOMER

Returns rate

```
Units returned ÷ units sold
```

50 ÷ 400 = **12.5%**. High usually means a fit or description problem.

PLANNING

Open to buy

```
Sales + markdowns + closing stock − opening stock − on order
```

£100k + £10k + £150k − £140k − £60k = **£60k** left to spend.

PLANNING

Wholesale to retail

```
Retail inc VAT ÷ wholesale price
```

£120 ÷ £48 = **2.5x**. UK stockists usually look for 2.5x or more.

MerchPilotIQ · Buying, merchandising and commercial strategy for fashion brands

merchpilotiq.com