nexamind EDUCATION

Name _____ Date _____

Unit 10 · Percentages — revision sheet

Everything you need from every section. Read it before the end-of-unit test.

10.1 Fractions, decimals and percentages

- **Per cent** means *out of a hundred*. 45% is 45 out of every 100.
- Percentage → decimal: **divide by 100**. 35% = 0.35.
- Decimal → percentage: **multiply by 100**. 0.35 = 35%.
- Percentage → fraction: put it over 100 and simplify. 45% = 45/100 = 9/20.
- Fraction → percentage: divide, then multiply by 100. 3/8 = 0.375 = 37.5%.
- Learn the common ones by heart: 1/2, 1/4, 3/4, 1/5, 1/10, 1/8.
- To **compare**, convert everything to one form — percentages are usually easiest.
- A percentage can be more than 100. 150% of 20 is 30.

Key words: *per cent · percentage · equivalent · convert · simplest form*

```
45% = 45 out of 100 = 45/100 = 0.45
35% ÷ 100 → 0.35
0.35 × 100 → 35%
7% → 0.07 not 0.7
45% = 45/100
HCF is 5
= 9/20
```

10.2 Percentages of a quantity

- **10% is one tenth** — divide by 10. This is the building block for everything else.
- **1% is one hundredth** — divide by 100. From 1% you can build any percentage at all.
- **50%** is halving, **25%** is dividing by 4, **75%** is three quarters.
- Build the awkward ones: 35% = 10% + 10% + 10% + 5%.
- 5% is always half of 10%, and 2.5% is half of that.
- p% of n and n% of p are equal — both are p × n ÷ 100. Use whichever is easier.
- Over 100% gives more than you started with: 150% of 200 is 300.
- To go backwards, find 1% first: if 30% is 24, then 1% is 0.8 and 100% is 80.

Key words: *of · mental method · quantity*

```
10% of 240 = 24
20% = 24 + 24 = 48
30% = 24 × 3 = 72
5% = 24 ÷ 2 = 12
1% of 250 = 2.5
8% = 2.5 × 8 = 20
37% = 2.5 × 37 = 92.5
```

10.3 Percentage increase and decrease

• To **increase** by p%: find p% and add it. To **decrease**: find p% and subtract it.
• In one step: increase by 20% is × 1.2; decrease by 20% is × 0.8.
• **Percentage change = change ÷ original × 100**.
• Always divide by the **original** amount, not the new one. This is the single most important rule in the section.
• 40 → 50 is a 25% increase; 50 → 40 is a 20% decrease. The same change, different starting points.
• Up 10% then down 10% does **not** return you to the start: 100 → 110 → 99.
• Increasing by 100% doubles an amount; decreasing by 100% leaves nothing.
• Always say whether the change is an increase or a decrease — the number alone is not an answer.

Key words: *increase · decrease · percentage change · original amount · discount*

```
increase 200 by 15%
15% of 200 = 30
200 + 30 = 230
increase by 20% → × 1.2
decrease by 20% → × 0.8
increase by 5% → × 1.05
40 → 50
```