Exercise walk-through

1.3 FDP operators, percentage change and compound interest

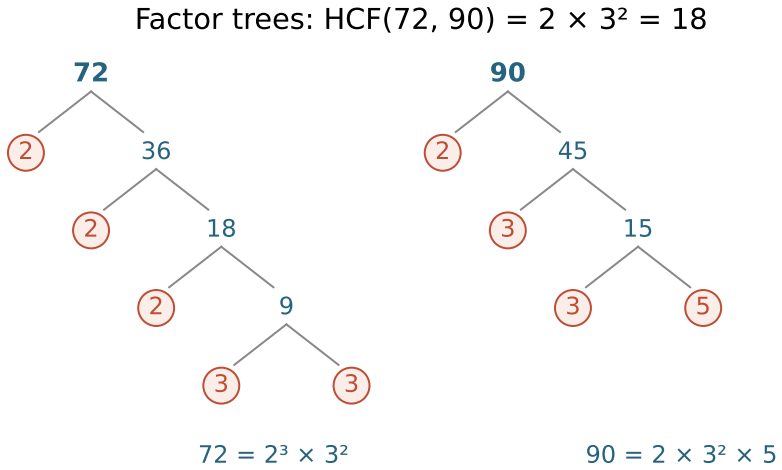
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Ordering and the four operations

- An **integer** is a whole number: positive, negative or zero.
- Order integers, decimals and fractions on a **number line** using the symbols $=$, $\neq$, $<$ and $>$.
- To compare different forms, change them to the same form first: $\frac{3}{5} = 0.6$, so $\frac{3}{5} < 0.62$.
- To add or subtract fractions, use a common **denominator**.

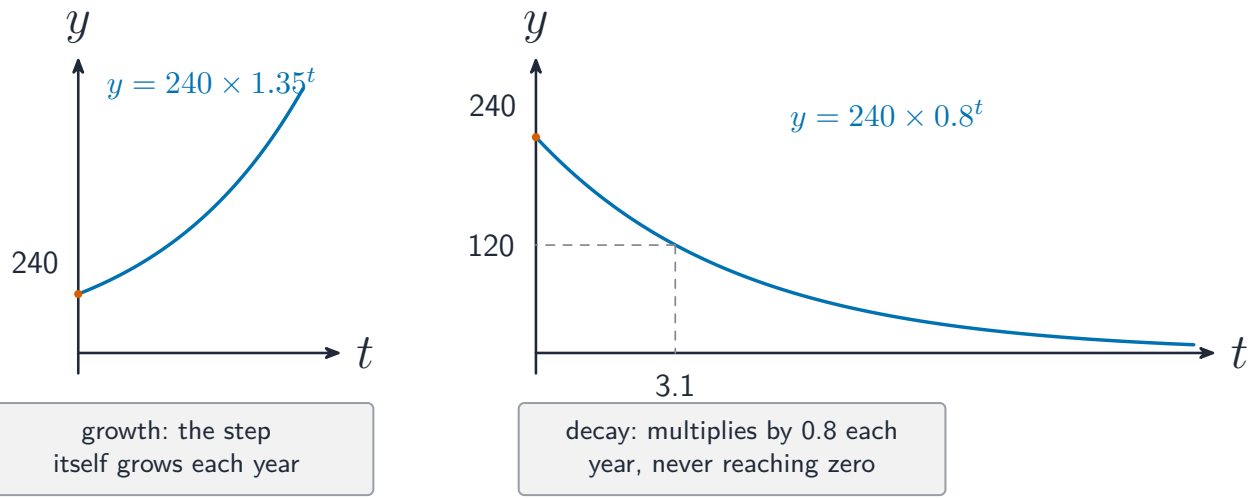
$$2\tfrac{1}{3} + 1\tfrac{1}{4} = \tfrac{7}{3} + \tfrac{5}{4} = \tfrac{28}{12} + \tfrac{15}{12} = \tfrac{43}{12} = 3\tfrac{7}{12}$$

Figure: Ordering and the four operations



- $72 = 2^3 \times 3^2$ and $90 = 2 \times 3^2 \times 5$
- $\text{HCF} = 2 \times 3^2 = 18$

Figure: Exponential growth and decay



- Growth: $y = 240 \times 1.35^t$ rises ever faster
- Decay: $y = 240 \times 0.8^t$ falls towards zero

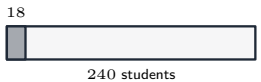
Exercises 2.1·2.2

2.1 Work out the value of each card. [2]

$\frac{3}{8}$ of 640

35% of 80

2.2 Of 240 students, 18 walk to school. Write 18 as a percentage of 240, and as a fraction of 240 in its simplest form. [2]



Exercises 2.1·2.2

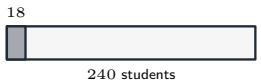
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$\frac{3}{8}$ of 640 | 35% of 80

2.1

- **240**
- **28**

2.2 Of 240 students, 18 walk to school. Write 18 as a percentage of 240, and as a fraction of 240 in its simplest form. [2]



2.2

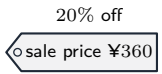
- $\frac{18}{240} \times 100 = \mathbf{7.5}\%$
- $\mathbf{\frac{3}{40}}$

Exercises 2.3·3.1

2.3 Write each recurring decimal as a fraction in its simplest form. [2]

$0.\dot{7}$ $0.1\dot{6}$

3.1 A coat is reduced by 20% in a sale. The sale price is ¥360. Find the original price. After the sale, the shop raises the sale price by 20%. Explain why the coat does not go back to its original price. [3]



Exercises 2.3·3.1

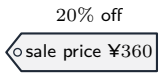
2.3 Write each recurring decimal as a fraction in its simplest form. [2]

$0.\dot{7}$ $0.1\dot{6}$

2.3

- $0.\dot{7} = \frac{7}{9}$
- $90x = 15$, so $0.1\dot{6} = \frac{1}{6}$

3.1 A coat is reduced by 20% in a sale. The sale price is ¥360. Find the original price. After the sale, the shop raises the sale price by 20%. Explain why the coat does not go back to its original price. [3]



3.1

- $360 \div 0.8$
- original price **¥450**
- $360 \times 1.2 = ¥432$: the 20% is now of a smaller amount

Exercise 3.2 (a)

3.2 Mei invests ¥5000 at 3% compound interest per year. Lin invests ¥5000 at 3.2% simple interest per year.

(a) Write down the multiplier for Mei's account and the value after 1 year. [2]

saver	money in	interest
Mei	¥5000	3% compound
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saver	money in	interest
Mei	¥5000	3% compound
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(a) 1.03; ¥5150

Exercise 3.2 (b)

3.2 Mei invests ¥5000 at 3% compound interest per year. Lin invests ¥5000 at 3.2% simple interest per year.

(b) Find the value of Mei's account after 4 years. [3]

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3.2 Mei invests ¥5000 at 3% compound interest per year. Lin invests ¥5000 at 3.2% simple interest per year.

(b) Find the value of Mei's account after 4 years. [3]

(b) 5000×1.03^4; **¥5627.54**

Exercise 3.2 (c)

3.2 Mei invests ¥5000 at 3% compound interest per year. Lin invests ¥5000 at 3.2% simple interest per year.

(c) Who has more money after 4 years, and by how much? [4]

Exercise 3.2 (c)

3.2 Mei invests ¥5000 at 3% compound interest per year. Lin invests ¥5000 at 3.2% simple interest per year.

(c) Who has more money after 4 years, and by how much? [4]

(c) Lin's interest $= 5000 \times 0.032 \times 4 = 640$; Lin has ¥5640; $5640 - 5627.54$; **Lin**, by ¥**12.46**

Exercise 3.2 (d)

3.2 Mei invests ¥5000 at 3% compound interest per year. Lin invests ¥5000 at 3.2% simple interest per year.

(d) After how many whole years is Mei's account first worth more than ¥6000? Find the overall percentage increase at that time. [5]

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(d) After how many whole years is Mei's account first worth more than ¥6000? Find the overall percentage increase at that time. [5]

(d) trials of 5000×1.03^n; $n = 6$: ¥5970.26; $n = 7$: ¥6149.37, so **7** years; $\frac{1149.37}{5000} \times 100 = \mathbf{23.0}\%$