Fractions

And the four operations!

Starter Questions

1. A triangle has lengths 8.5cm, 6.4cm and 10.5cm. Is it a right angled triangle?

2. A model plane is similar to a real aircraft. The model plane is 250 times smaller. What is the volume scale factor between the planes?
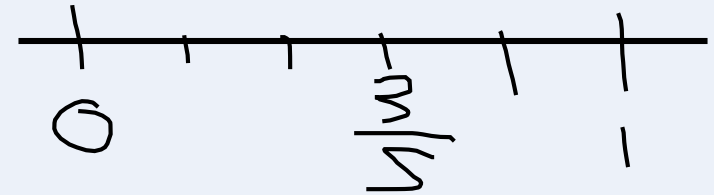
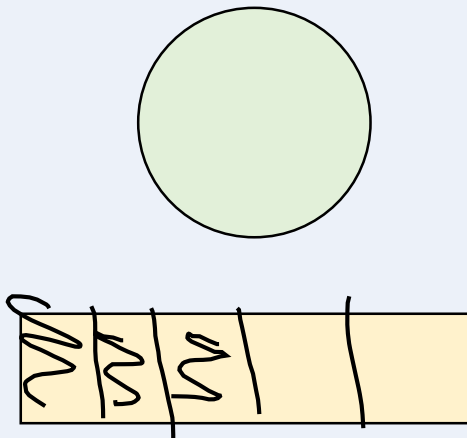3. Solve: $5x + 3 = 2x + 7$
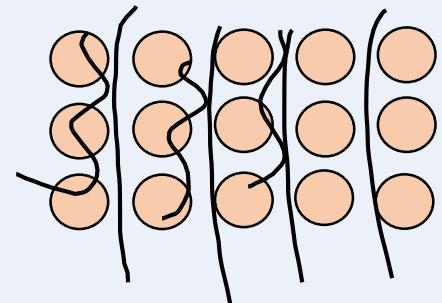
Fractions of a quantity

$\frac{3}{5}$ of an object

$\frac{3}{5}$ on number line

$\frac{3}{5}$

$\frac{3}{5}$ of a number

Fractions of a quantity

$\dfrac{5}{11}$ *of* 66 = 66 ÷ 11 × 5 = 30 $\dfrac{3}{5}$ × 50 = 50 ÷ 5 × 3 = 30

$\dfrac{3}{4}$ *of* 4 = 4 ÷ 4 × 3 = 3 $\dfrac{4}{7}$ × 49 = 42

$\dfrac{5}{6}$ × 42 = 42 ÷ 6 × 5 = 35 $\dfrac{7}{10}$ × 110 = 77

Mixed Numbers <-> Improper Fractions

$3\frac{3}{4}$

①

$\frac{15}{4}$

$3\frac{1}{2}$

②

$\frac{7}{2}$

5

③

$\frac{15}{3}$

④
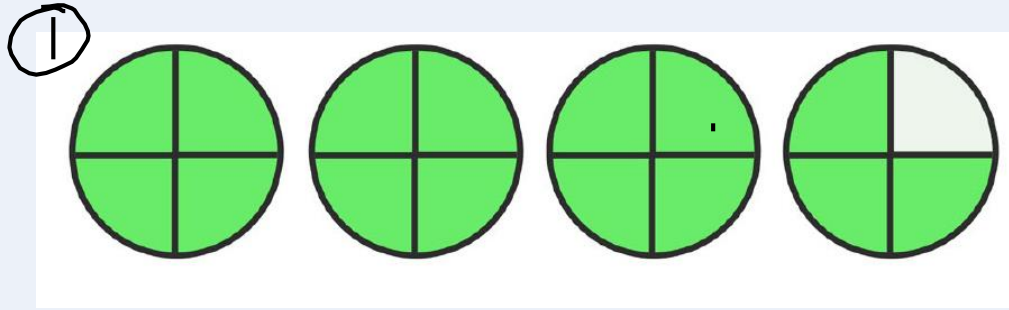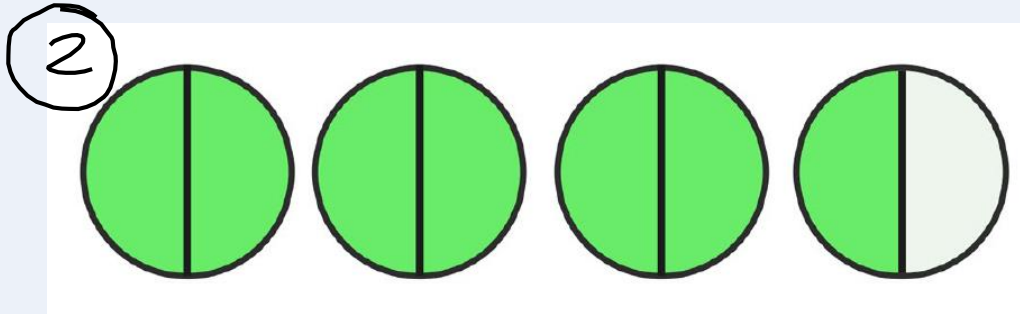
$10\frac{2}{5}$

$10\frac{2}{5} = \frac{10\times5+2}{5}$

$\frac{52}{5}$

$$\frac{2}{3} + \frac{1}{4}$$
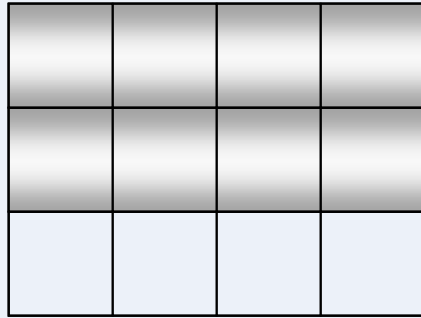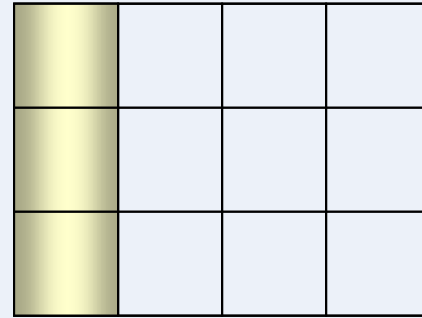
Equivalent

Equivalent

$$\frac{8}{12} + \frac{3}{12}$$
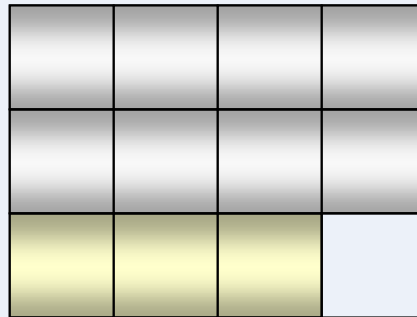
$$= \frac{11}{12}$$

+ Diagram 1

Multiples of 3 and 4	
3	4
6	8
9	12
12	16
15	20
12 is the LCM	

$\dfrac{2}{5}$ + $\dfrac{3}{8}$
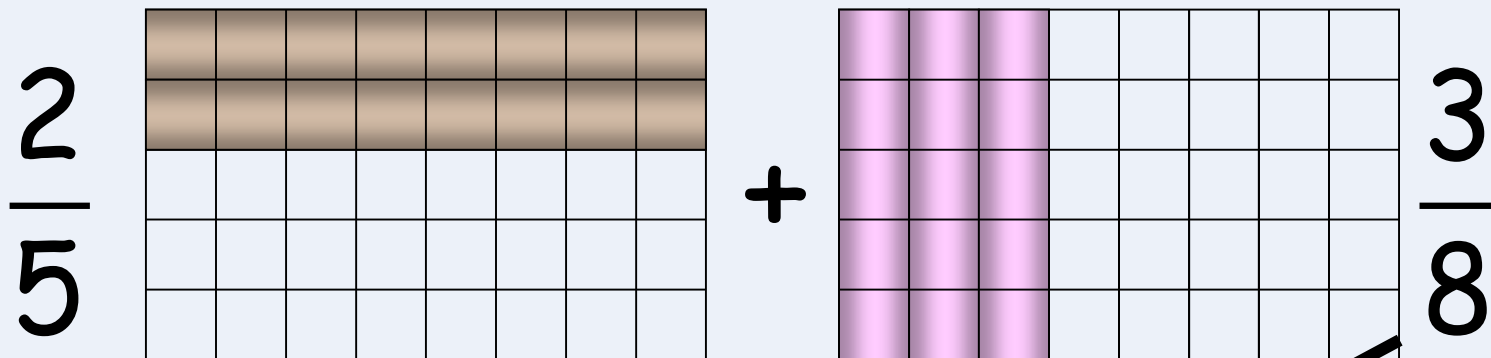
Equivalent

$\dfrac{16}{40}$ + $\dfrac{15}{40}$

Equivalent
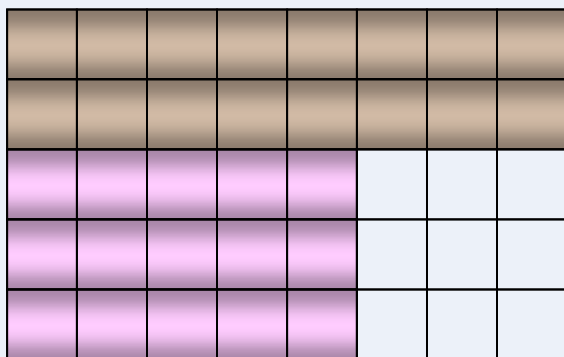
= $\dfrac{31}{40}$

+ Diagram 2

Multiples of 5 and 8	
5	8
10	16
15	32
20	40
25	48
30	56
35	64
40	72
40 is the LCM	

Adding Fractions

$$\frac{2}{3} + \frac{4}{5} =$$

Worked Example	Your Turn
$\dfrac{1}{7} + \dfrac{2}{5}$	$\dfrac{1}{6} + \dfrac{3}{5}$
$= \dfrac{5}{35} + \dfrac{14}{35}$	$= \dfrac{5}{30} + \dfrac{18}{30}$
$= \dfrac{19}{35}$	$= \dfrac{23}{30}$

1. $\frac{1}{8} + \frac{2}{8}$

2. $\frac{1}{8} + \frac{4}{8}$

3. $\frac{1}{8} + \frac{1}{2}$

4. $\frac{1}{4} + \frac{1}{2}$

5. $\frac{1}{4} + \frac{1}{3}$

6. $\frac{1}{4} + \frac{1}{5}$

7. $\frac{1}{4} + \frac{2}{5}$

8. $\frac{1}{4} + \frac{3}{5}$

9. $\frac{1}{9} + \frac{3}{5}$

10. $\frac{1}{9} + \frac{2}{5}$

11. $\frac{2}{9} + \frac{2}{5}$

12. $\frac{3}{9} + \frac{2}{5}$

13. $\frac{4}{9} + \frac{2}{5}$

14. $\frac{4}{9} + \frac{2}{7}$

15. $\frac{4}{9} + \frac{3}{7}$

16. $\frac{3}{9} + \frac{3}{7}$

17. $\frac{2}{9} + \frac{3}{7}$

18. $\frac{x}{9} + \frac{3}{7}$

19. $\frac{x}{9} + \frac{y}{7}$

20. $\frac{x}{9} + \frac{x}{7}$

1. $\frac{1}{8} + \frac{2}{8}$ $\frac{3}{8}$

2. $\frac{1}{8} + \frac{4}{8}$ $\frac{5}{8}$ = $\frac{10}{16}$

3. $\frac{1}{8} + \frac{1}{2}$ $\frac{5}{8}$

4. $\frac{1}{4} + \frac{1}{2}$ $\frac{3}{4}$

5. $\frac{1}{4} + \frac{1}{3}$ $\frac{7}{12}$

6. $\frac{1}{4} + \frac{1}{5}$ $\frac{9}{20}$

7. $\frac{1}{4} + \frac{2}{5}$ $\frac{13}{20}$

8. $\frac{1}{4} + \frac{3}{5}$ $\frac{17}{20}$

9. $\frac{1}{9} + \frac{3}{5}$ $\frac{14}{45}$ $\frac{32}{45}$

10. $\frac{1}{9} + \frac{2}{5}$ $\frac{23}{45}$

11. $\frac{2}{9} + \frac{2}{5}$ $\frac{28}{45}$

12. $\frac{3}{9} + \frac{2}{5}$ $\frac{33}{45}$

13. $\frac{4}{9} + \frac{2}{5}$ $\frac{38}{45}$

14. $\frac{4}{9} + \frac{2}{7}$ $\frac{46}{63}$

15. $\frac{4}{9} + \frac{3}{7}$ $\frac{55}{63}$

16. $\frac{3}{9} + \frac{3}{7}$ $\frac{48}{63}$

17. $\frac{2}{9} + \frac{3}{7}$ $\frac{41}{63}$

18. $\frac{x}{9} + \frac{3}{7}$ $\frac{7x+27}{63}$

19. $\frac{x}{9} + \frac{y}{7}$ $\frac{7x+9y}{63}$

20. $\frac{x}{9} + \frac{x}{7}$ $\frac{16x}{63}$

Worked Example	Your Turn
$\dfrac{2}{5} - \dfrac{1}{3}$	$\dfrac{2}{3} - \dfrac{1}{5}$
$= \dfrac{6}{15} - \dfrac{5}{15}$	$= \dfrac{10}{15} - \dfrac{3}{15}$
$= \dfrac{1}{15}$	$= \dfrac{7}{15}$

1. $\dfrac{2}{5} - \dfrac{1}{7}$

2. $\dfrac{1}{7} - \dfrac{2}{5}$

3. $\dfrac{2}{5} - \dfrac{2}{7}$

4. $\dfrac{2}{3} - \dfrac{2}{5}$

5. $\dfrac{2}{3} - \dfrac{1}{4}$

6. $\dfrac{2}{3} - \dfrac{3}{4}$

7. $\dfrac{3}{4} - \dfrac{2}{3}$

8. $\dfrac{3}{4} - \dfrac{2}{30}$

9. $\dfrac{3}{4} - \dfrac{3}{5}$

10. $\dfrac{3}{4} - \dfrac{9}{15}$

1. $\dfrac{2}{5} - \dfrac{1}{7} = \dfrac{9}{35}$

2. $\dfrac{1}{7} - \dfrac{2}{5} = -\dfrac{9}{35}$

3. $\dfrac{2}{5} - \dfrac{2}{7} = \dfrac{4}{35}$

4. $\dfrac{2}{3} - \dfrac{2}{5} = \dfrac{4}{15}$

5. $\dfrac{2}{3} - \dfrac{1}{4} = \dfrac{5}{12}$

6. $\dfrac{2}{3} - \dfrac{3}{4} = -\dfrac{1}{12}$

7. $\dfrac{3}{4} - \dfrac{2}{3} = \dfrac{1}{12}$

8. $\dfrac{3}{4} - \dfrac{2}{30} = \dfrac{41}{60}$

9. $\dfrac{3}{4} - \dfrac{3}{5} = \dfrac{3}{20}$

10. $\dfrac{3}{4} - \dfrac{9}{15} = \dfrac{3}{20}$

Explain

This can be simplified to $\frac{3}{4} \times \frac{1}{3} = \frac{3}{12} = \frac{1}{4}$

$\frac{3}{12}$

$\frac{1}{3} \times \frac{3}{4}$

Worked Example	Your Turn
$\dfrac{2}{3} \times \dfrac{5}{8}$	$\dfrac{2}{3} \times \dfrac{7}{10}$
$= \dfrac{10}{24}$	$= \dfrac{14}{30} \quad \begin{array}{c}\div 2 \\ \div 2\end{array}$
$= \dfrac{5}{12}$	$= \dfrac{7}{15}$

1. $\frac{1}{2} \times \frac{2}{5} = ?$

2. $\frac{2}{5} \times \frac{1}{2} = ?$

3. $\frac{2}{5} \times \frac{1}{3} = ?$

4. $\frac{2}{5} \times \frac{1}{4} = ?$

5. $\frac{2}{5} \times \frac{3}{4} = ?$

6. $\left(\frac{3}{4}\right)^2 = ?$ $\frac{3}{4} \times \frac{3}{4}$

7. $\frac{0}{5} \times \frac{3}{4} = ?$

8. $\frac{2}{3} \times \frac{5}{7} = ?$

9. $\frac{2}{3} \times \frac{5}{?} = \frac{10}{12}$

10. $\frac{2}{3} \times ? = \frac{2}{6}$

11. $\frac{2}{?} \times \frac{5}{?} = \frac{10}{9}$

12. $\frac{2}{3} \times \frac{a}{b} = ?$

13. $\frac{a}{b} \times \frac{a}{b} = ?$

14. $\frac{b}{a} \times \frac{a}{b} = ?$

15. $\frac{2}{3} \times \frac{3}{5} \times \frac{4}{7} = ?$

16. $\frac{2}{3} \times \frac{3}{5} \times \frac{9}{11} = ?$

17. $\left(\frac{2}{3}\right)^2 = ?$

18. $\frac{2}{3} \times \left(\frac{3}{5}\right)^2 = ?$

1. $\dfrac{1}{2} \times \dfrac{2}{5} = \dfrac{2}{10} = \dfrac{1}{5}$

2. $\dfrac{2}{5} \times \dfrac{1}{2} = \dfrac{2}{10} = \dfrac{1}{5}$

3. $\dfrac{2}{5} \times \dfrac{1}{3} = \dfrac{2}{15}$

4. $\dfrac{2}{5} \times \dfrac{1}{4} = \dfrac{2}{20} = \dfrac{1}{10}$

5. $\dfrac{2}{5} \times \dfrac{3}{4} = \dfrac{6}{20} = \dfrac{5}{10}$

6. $\left(\dfrac{3}{4}\right)^2 = \dfrac{9}{16}$

7. $\dfrac{0}{5} \times \dfrac{3}{4} = \dfrac{0}{20} = 0$

8. $\dfrac{2}{3} \times \dfrac{5}{7} = \dfrac{10}{21}$

9. $\dfrac{2}{3} \times \dfrac{5}{4} = \dfrac{10}{12}$

10. $\dfrac{2}{3} \times \dfrac{1}{2} = \dfrac{2}{6}$

11. $\dfrac{2}{3} \times \dfrac{5}{3} = \dfrac{10}{9}$

12. $\dfrac{2}{3} \times \dfrac{a}{b} = \dfrac{2a}{3b}$

13. $\dfrac{a}{b} \times \dfrac{a}{b} = \dfrac{a^2}{b^2}$

14. $\dfrac{b}{a} \times \dfrac{a}{b} = \dfrac{ab}{ab} = 1$

15. $\dfrac{2}{3} \times \dfrac{3}{5} \times \dfrac{4}{7} = \cancel{\dfrac{ab}{ab} = 1} \quad \dfrac{24}{105}$

16. $\dfrac{2}{3} \times \dfrac{3}{5} \times \dfrac{9}{11} = \dfrac{54}{165} = \dfrac{18}{33}$

17. $\left(\dfrac{2}{3}\right)^2 = \dfrac{4}{9}$

18. $\dfrac{2}{3} \times \left(\dfrac{3}{5}\right)^2 = \dfrac{18}{75}$

Dividing fractions

- What is $\frac{2}{3} \div \frac{1}{3}$?

$$= \frac{2}{3} \times \frac{3}{1} = \frac{6}{3} = 2$$

- What about $\frac{12}{8} \div \frac{4}{8}$?

$$= \frac{12}{8} \times \frac{8}{4} = \frac{96}{32} = 3$$
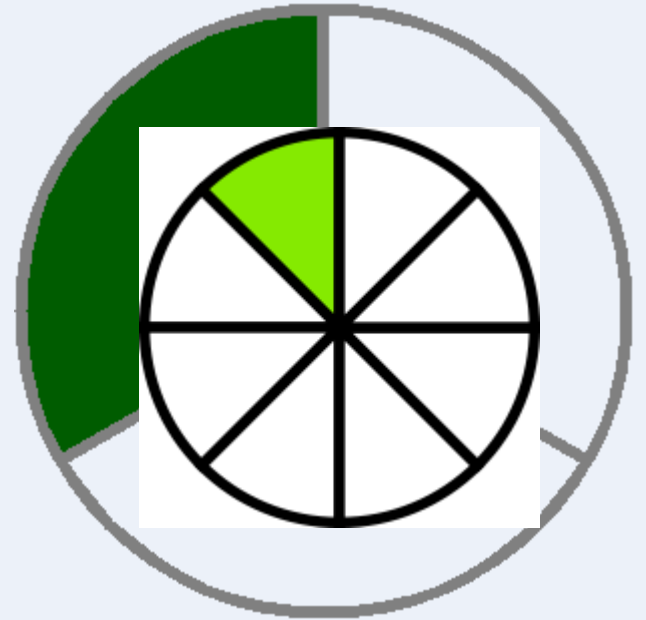
Dividing fractions

- We could find a common denominator and then divide the numerators.

- But it's easier to just multiply the first fraction by the reciprocal of the second.

Worked Example	Your Turn
$\dfrac{3}{4} \div \dfrac{2}{7} = \dfrac{3}{4} \times \dfrac{7}{2}$	$\dfrac{3}{4} \div \dfrac{4}{7} = \dfrac{3}{4} \times \dfrac{7}{4}$
$= \dfrac{21}{8}$	$= \dfrac{21}{16}$

Starter Questions

1. A rectangle is $\frac{3}{5}\ cm$ long and $\frac{5}{8}\ cm$ high. Find its perimeter and area.

2. One angle of a triangle is 22 degrees. Its sides are 5cm, 12cm and 13cm. Find the other 2 angles.

3. Solve: $x + 3 \geq 2x - 10$

Division with Fractions Notes

1. $\dfrac{2}{3} \div \dfrac{4}{5} =$

2. $\dfrac{4}{6} \div \dfrac{4}{5} =$

3. $\dfrac{4}{3} \div \dfrac{4}{5} =$

4. $\dfrac{4}{3} \div \dfrac{2}{5} =$

5. $\dfrac{3}{4} \div \dfrac{2}{5} =$

6. $\dfrac{3}{4} \div \dfrac{5}{2} =$

7. $\dfrac{3}{4} \div \dfrac{1}{2} =$

8. $\dfrac{1}{2} \div \dfrac{3}{4} =$

9. $\dfrac{1}{2} \div \dfrac{1}{4} =$

10. $\dfrac{1}{2} \div 4 =$

11. $\dfrac{1}{3} \div 4 =$

12. $4 \div \dfrac{1}{3} =$

13. $4 \div \dfrac{7}{3} =$

14. $20 \div \dfrac{7}{3} =$

15. $5 \div \dfrac{7}{12} =$

16. $\dfrac{1}{5} \div \dfrac{7}{15} =$

17. $\dfrac{1}{5} \div 1\dfrac{13}{15} =$

18. $\dfrac{a}{5} \div 1\dfrac{13}{15} =$

19. $\dfrac{1}{b} \div 1\dfrac{13}{15} =$

20. $\dfrac{1}{5} \div 1\dfrac{c}{15} =$

21. $\dfrac{1}{5} \div 1\dfrac{13}{d} =$

Plenary

$$\frac{3}{4} + \left(\frac{5}{2} - \frac{4}{5}\right) = \frac{3}{4} + \left(\frac{25}{10} - \frac{8}{10}\right)$$

$$= \frac{3}{4} + \frac{17}{10} = \frac{15}{20} + \frac{34}{20}$$

$$= \frac{49}{20}$$

$$1\frac{2}{3} \times 3\frac{5}{6} = \frac{5}{3} \times \frac{23}{6}$$

$$= \frac{115}{18} = 6\frac{7}{18}$$

Percentage Change

Recap

- How do we find:

- 10% $\div 10$ $\times 0.1$
- 50% $\div 2$ $\times 0.5$
- 1% $\div 100$ $\times 0.01$
- 30% $\div 10 \times 3$ $\times 0.3$
- 20% $\div 10 \times 2$ $\div 5$ $\times 0.2$
- 17.5% $\times 0.175$
- 250% $\times 2 + (\div 2)$ $\times 2.5$

Decimal Multipliers

Increase by 5%

$$100\% + 5\%$$

$$= 1 + 0.05 = 1.05$$

Decrease by 2.3%

$$= 100\% - 2.3\% = 97.7\%$$

$$= 1 - 0.023$$

$$= 0.977$$

Worked Example	Your Turn
Increase 40 *by* 10%	*Increase* 90 *by* 10%

Worked Example

$= 40 \times 1.1$

$= 44$

$100\% + 10\%$

$= 110\%$

$= 1.1$

Your Turn

$= 90 \times 1.1$

$= 99$

Worked Example	Your Turn
Decrease 70 *by* 25%	*Decrease* 40 *by* 45%

$= 70 \times 0.75$

$= 52.5$

$\qquad\qquad$ $= 40 \times 0.55$

$\qquad\qquad$ $= 22$

$100\% - 25\%$

$= 75\%$

$= 0.75$

$\qquad\qquad$ $100\% - 45\%$

$\qquad\qquad$ $= 55\%$

$\qquad\qquad$ $= 0.55$

1. *Increase* 30 *by* 10%

2. *Decrease* 30 *by* 20%

3. *Increase* 60 *by* 20%

4. *Decrease* 60 *by* 10%

5. *Increase* 74 *by* 10%

6. *Decrease* 74 *by* 50%

7. *Increase* 84 *by* 50%

8. *Decrease* 84 *by* 10%

9. *Increase* 84 *by* 5%

10. *Increase* 44 *by* 5%

11. *Decrease* 44 *by* 10%

12. *Increase* 44 *by* 20%

13. *Decrease* 44 *by* 50%

14. *Increase* 44 *by* 60%

15. *Decrease* 88 *by* 60%

16. *Increase* 88 *by* 30%

17. *Decrease* 88 *by* 15%

18. *Increase* 88 *by* 10%

1. *Increase* 30 *by* 10%   33

2. *Decrease* 30 *by* 20%   24

3. *Increase* 60 *by* 20%   72

4. *Decrease* 60 *by* 10%   54

5. *Increase* 74 *by* 10%   81.4

6. *Decrease* 74 *by* 50%   37

7. *Increase* 84 *by* 50%   126

8. *Decrease* 84 *by* 10%   75.6

9. *Increase* 84 *by* 5%   88.2

10. *Increase* 44 *by* 5%   46.2

11. *Decrease* 44 *by* 10%   39.6

12. *Increase* 44 *by* 20%   52.8

13. *Decrease* 44 *by* 50%   22

14. *Increase* 44 *by* 60%   70.4

15. *Decrease* 88 *by* 60%   35.2

16. *Increase* 88 *by* 30%   114.4

17. *Decrease* 88 *by* 15%   74.8

18. *Increase* 88 *by* 10%   96.8

Use these 12 numbers, once each, in the gaps below.

10, 20, 25, 35, 40, 50, 60, 70, 75, 80, 90, 100

£ _____ increased by _____ % = £ _____

£ _____ increased by _____ % = £ _____

£ _____ decreased by _____ % = £ _____

£ _____ decreased by _____ % = £ _____

Notes Page 39

1. **A golf professional gives 5% of his winnings to his caddy. How much does the professional keep for himself if he wins £120,000?**

   $100\% - 5\%$
   $= 95\% = 0.95$

   120000×0.95
   $= £114000$

2. **The cost of a washing machine before VAT is £240. Calculate the price after VAT at 20% is added.**

   $100\% + 20\%$
   $= 120\% = 1.2$

   $240 \times 1.2 = £288$

3. **A TV is reduced by 15% in the sale. It originally cost £600. How much does it cost now?**

   $600 \times 0.85 = £510$

4. **The population of a small town grew by 6.5% over the course of a year. At the start of the year there were 12 400 people. How many were there at the end of the year? Round your answer to 2 SF.**

   $12400 \times 1.065 = 13206 = 13000$

Worked example- Simple interest

- £600 is invested for 3 years at 3% **simple** interest per year.

- How much will they have at the end of the 3 years?

$600 \times 0.03 = £18$

$600 + 18 + 18 + 18 = £654$

Your turn

- £650 is invested in a bank account for 2 years at 1.5% **simple** interest per year.

- How much is in the account at the end of the 2 years?

Worked example- Compound interest

Christian invested £6500 for 2 years in a savings account.

He was paid 4% per annum **compound** interest.

How much money did Christian have in his savings account at the end of 2 years?

Y1

£6500 × 1.04 = £6760

Y2

£6760 × 1.04 = £7030.40

Your turn

100% + 2.5%
= 102.5%
= 1.025

Ben invests £400 in a bank account.

The account pays **compound** interest at a rate of 2.5% per year.

At the end of two years, how much will Ben have in his account?

Y1

£400 × 1.025 = £410

Y2

£410 × 1.025 = £420.25

Worked example- Compound interest

Christian invested £6500 for 2 years in a savings account.

He was paid 4% per annum **compound** interest.

How much money did Christian have in his savings account at the end of 2 years?

$$£6500 \times (1.04)^2$$

$$= £7030.40$$

Your turn

Ben invests £400 in a bank account.

The account pays **compound** interest at a rate of 2.5% per year.

At the end of two years, how much will Ben have in his account?

$$£400 \times (1.025)^2$$

$$= £420.25$$

Worked example- Compound interest

The value of a second-hand car is £6000.

Each year it loses 20% of its value.

Work out its value in 3 years' time.

Your turn

Emma bought a car for £10,000

Each year the car depreciates by 15%

How much will the car be worth in 2 years' time?

Worked example- Compound interest

The value of a second-hand car is £6000.

Each year it loses 20% of its value.

Work out its value in 3 years' time.

Your turn

Emma bought a car for £10,000

Each year the car depreciates by 15%

How much will the car be worth in 2 years' time?

Notes Page 40

1. City Police aim to reduce crime figures by 8% each year for the next 3 years. If the current number of crimes committed each year is 25,000, how many do they hope for in 3 years time? Give your answer to the nearest hundred.

2. The number of bacteria in a Petri dish increases at a rate of 3% every hour. If there are 12,000 bacteria at the start, how many will there be in 4 hours? Give your answer to 2SF.

3. The number of subscribers to a new magazine is expected to increase by 24% every year. This year there are 16,500 subscribers. How many subscribers are there expected to be in 3 years time? Give your answer to 3 significant figures.

4. The amount of serum in a patient's bloodstream decreases by 20% every hour. A patient is injected with 6mg of the serum at 9am. How many milligrams will remain in his bloodstream at 1pm? Give your answer to the nearest tenth of a milligram.

5. Jamie bought a house for £120,000. It appreciated in value by 3.7% for each of the next four years. How much was the house worth after four years?

Plenary

Sam wants to invest £2000 for 2 years in the same bank.

At the end of 2 years, Sam wants to have as much money

as possible.

Which bank should Sam use?

Bonus Bank	**Super Savings Bank**
Compound Interest	Compound Interest
5% for the first year	4% for the first year
0.5% for each extra year	1% for each extra year

Reverse Percentages

1. City Police aim to <u>reduce</u> crime figures by 8% each year for the next 3 years. If the current number of crimes committed each year is 25,000, how many do they hope for in 3 years time? Give your answer to the nearest hundred.

$$25000 \times (0.92)^3$$
$$= 19500$$

1Y $25000 \times 0.92 = 23000$

2Y $23000 \times 0.92 = 21160$

3Y/2 $21160 \times = 19467$

$$100\% - 8\%$$
$$= 92\%$$
$$= 0.92$$

2. The number of bacteria in a Petri dish increases at a rate of 3% every hour. If there are 12,000 bacteria at the start, how many will there be in 4 hours? Give your answer to 2SF.

$$12000 \times (1.03)^4$$

3. The number of subscribers to a new magazine is expected to increase by 24% every year. This year there are 16,500 subscribers. How many subscribers are there expected to be in 3 years time? Give your answer to 3 significant figures.

4. The amount of serum in a patient's bloodstream decreases by 20% every hour. A patient is injected with 6mg of the serum at 9am. How many milligrams will remain in his bloodstream at 1pm? Give your answer to the nearest tenth of a milligram.

5. Jamie bought a house for £120,000. It appreciated in value by 3.7% for each of the next four years. How much was the house worth after four years?

Starter Questions

1. Find the mean of the following numbers:
$$1, 4, 7, 7, 90, 101$$

2. Solve the system of equations:
$$5x + 2y = 54$$
$$2x + 2y = 24$$

3. $6x + 3 - x = 5x + 15$ Comment.

$6 \div \underline{6} = 1$

$15 \div \underline{15} = 1$

$22.5 \div \underline{22.5} = 1$

$37 \div \underline{37} = 1$

$72 \div \underline{72} = 1$

$88 \div \underline{88} = 1$

$94 \div \underline{94} = 1$

$104 \div \underline{104} = 1$

$117.5 \div \underline{117.5} = 1$

$£50 ÷ 10$
$= £5$
$£5 × 7$
$= £35$

$70\% = £35$

$÷ 70$

$1\% = £0.50$

$× 100$

$100\% = £50$

$÷ 70$

$× 100$

$35\% = £23.80$

$÷ 35$

$1\% = £0.68$

$× 100$

$100\% = £68$

$÷ 35$

$× 100$

$88\% = £220$

$÷ 88$

$× 100$

$1\% = £2.50$

$100\% = £250$

$÷ 88$

$× 100$

Rob is buying a new car and has seen this advert:

He got a discount of 25% off the price of the car.

He paid £7200 for the car.

Work out the price of the car before the discount.

100% −
25% off original price
Now £7200

$75\% = £7200$

$1\% = £96$

$100\% = £9600$

$\div 75$

$\times 100$

Another example

The price of a washing machine is reduced by 17.5%.

The reduced price is £264.

By how much has the original price been reduced?

$82.5\% = £264$

$1\% = £3.20$

$100\% = £320$

$\div 82.5$

$\times 100$

100%
-17.5%
$=$

Reverse Percentages

Find 100% when...

a)

15 represents 50%

b)

12 represents 10%

c)

8 represents 20%

d)

6 represents 5%

e)

15% of an amount is 36

f)

35% of an amount is 21

g)

A coat is reduced by 15% to £68

h)

A top is reduced by 6% to £47

i)

A sofa is reduced by 17% to £1,162

j)

John gets a raise of 10% to £7.48/hr

k)

A house depreciates by 0.3% to £249,250

l)

Population increases by 0.04% to 718,262

Notes P41

Practice makes permanent!

Worded Questions.

1). A camera is reduced by 5% in a sale. The sale price is £15.20. What was the original price?

2). An antique clock's price increases by 40% in a year. It now costs £112. What was it worth ?

3). Jean puts some money into shares. After a year the share price has increased by 16%. It is now worth £139.20. How much was originally spent on shares ?

4). Ian buys a second-hand car. The price falls by 24%. He sells it for £2356. How much did he pay for it ?

5). A season ticket for Bolton F.C. this season is to go up by 20%. It will cost £288. How much was a season ticket last season ?

6). A shirt is slightly shop soiled so it is reduced by 25%. It is now £12, how much was it to be sold for ?

7). The bill for a meal came to the cost of the meal plus 15% service charge. The total cost was £80.50. What was just the cost of the meal ?

8). In Durry's winter sale the following items where offered at 35% reductions. Here is the sale price, find the original price.
   a). Stereo £130
   b). Television £351
   c). Video recorder £97.50
   d). Walkman £9.10
   e). Camcorder £520
   f). Blender £5.85.

9). A salesperson is offered a rise of 12%. She will now earn £268.80 weekly.

Answers

Page 6. Worded Questions.

1). £16   2). £80   3). £120   4). £3100   5). £240   6). £16   7). £70

8). a). £200   b). £540   c). £150   d). £14   e). £800   f). £9   9). £240

10). 64Kg   11). 700   12). 85000   13). 2100   14). £80000   15). 22000

16). 32   17). 62Kg   18). 42m

Recap Lesson

SMART Notebook