Higher tier unit 4a-1 check in test

Non-calculator

Q1.   Write $18 \div 24$ as a fraction in its simplest form.

Q2.   Which of these fractions is the largest?

$$\frac{5}{6} \qquad \frac{4}{7} \qquad \frac{18}{21} \qquad \frac{11}{14}$$

Q3.   Work out $\frac{11}{25}$ of 2000.

Q4.   Convert $\frac{51}{12}$ to a mixed number.

Q5.   Work out $1\frac{3}{4} + 3\frac{1}{2}$.

Q6.   Work out $3\frac{1}{3} \mid 4$.

Q7.   Work out $3\frac{1}{3} \cdot 4\frac{2}{5}$.

       Give your answer as a mixed number in its simplest form.

Q8.   Work out the reciprocal of 1.25

Q9.   Which of these fractions converts to a terminating decimal?

$$\frac{21}{31} \qquad \frac{24}{32} \qquad \frac{9}{33} \qquad \frac{18}{34}$$

Q10. Express the recurring decimal $0.1\dot{5}$ as a fraction.
       Give your answer in its simplest form.

Topics listed in objectives

- Express a given number as a fraction of another;
- Find equivalent fractions and compare the size of fractions;
- Write a fraction in its simplest form, including using it to simplify a calculation, e.g. $50 \div 20 = \frac{50}{20} = \frac{5}{2} = 2.5$;
- Find a fraction of a quantity or measurement, including within a context;
- Convert a fraction to a decimal to make a calculation easier;
- Convert between mixed numbers and improper fractions;
- Add and subtract fractions, including mixed numbers;
- Multiply and divide fractions, including mixed numbers and whole numbers and vice versa;
- Understand and use unit fractions as multiplicative inverses;
- By writing the denominator in terms of its prime factors, decide whether fractions can be converted to recurring or terminating decimals;
- Convert a fraction to a recurring decimal and vice versa;
- Find the reciprocal of an integer, decimal or fraction;

Answers

Q1. $\frac{3}{4}$

Q2. $\frac{18}{21}$

Q3. 880

Q4. $4\frac{1}{4}$

Q5. $5\frac{1}{4}$

Q6. $\frac{5}{6}$

Q7. $14\frac{2}{3}$

Q8. 0.8

Q9. $\frac{24}{32}$

Q10. $\frac{7}{45}$

Higher tier unit 4a-2 check in test

Calculator

Q1.   Work out 15% of £80

Q2.   Karen got 38% in an English test.
      She got 32 out of 80 in a maths test.

      What was Karen's percentage score for the maths test and in which subject did she do better?

Q3.   A book shop estimated that they would sell 150 copies of a forthcoming book.
      They took 177 orders before the book was published.

      Write the number of orders as a percentage of their estimate.

Q4.   A set of tyres normally costs £500
      In a sale there is a 30% discount.

      Work out the sale price of the set of tyres.

Q5.   Keiran enlarged a photograph. The copy was 225% the size of the original.
      The length of the original photograph was 15 cm.

      Find the length of the enlarged copy.

Q6.   Tony buys and sells cars.

      On Monday, Tony buys a car for £1500
      On Tuesday, Tony sells the car for £2150

      Find the percentage profit Tony made on this car.

Q7.   Bill's weight decreases from 64.8 kg to 59.3 kg.

      Calculate the percentage decrease in Bill's weight.
      Give your answer correct to 3 significant figures.

Q8.   A new television costs £500 including VAT at 20%.

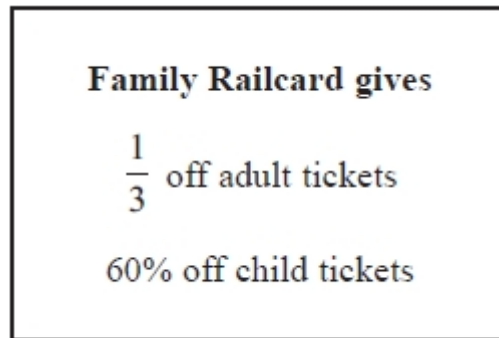   What is the cost of the television excluding VAT?
      Give your answer to the nearest penny.

Q9. Mr Brown and his 2 children are going to London by train.

An adult ticket costs £24
A child ticket costs £12

Mr Brown has a Family Railcard.

Family Railcard gives

$\frac{1}{3}$ off adult tickets

60% off child tickets

Work out the total cost of the tickets when Mr Brown uses his Family Railcard.

Q10. £500 is invested at a simple interest rate of 3% per year.
After how many years is the total interest £60?

Topics listed in objectives
- Convert between fractions, decimals and percentages;
- Express a given number as a percentage of another number;
- Express one quantity as a percentage of another where the percentage is greater than 100%
- Find a percentage of a quantity;
- Find the new amount after a percentage increase or decrease;
- Work out a percentage increase or decrease, including: simple interest, income tax calculations, value of profit or loss, percentage profit or loss;
- Compare two quantities using percentages, including a range of calculations and contexts such as those involving time or money;
- Find a percentage of a quantity using a multiplier and use a multiplier to increase or decrease by a percentage in any scenario where percentages are used;
- Find the original amount given the final amount after a percentage increase or decrease (reverse percentages), including VAT;
- Use calculators for reverse percentage calculations by doing an appropriate division;
- Use percentages in real-life situations, including percentages greater than 100%;
- Describe percentage increase/decrease with fractions, e.g. 150% increase means $2\frac{1}{2}$ times as big;
- Understand that fractions are more accurate in calculations than rounded percentage or decimal equivalents, and choose fractions, decimals or percentages appropriately for calculations.

Answers
Q1.   £12
Q2.   Karen scored 40% in Maths; she did better in Maths
Q3.   118%
Q4.   £350
Q5.   33.75 cm
Q6.   43%
Q7.   8.49%
Q8.   £416.67
Q9.   £25.60
Q10.   4

Higher tier unit 4b check in test

Calculator

Q1. Mrs Webb divides £100 between her two children, Ian and Molly.
     She gives Ian £65 and the rest to Molly.
     Write the amounts the children get as a ratio, Ian : Molly, in its simplest form.

Q2. Ahmed and Kate shared a cake in the ratio 3 : 5.
     What fraction of the cake did each get?

Q3. At a party, there as twice as many girls as boys.
     Write this relationship as a linear function, where *x* represents the number of boys and *y*
     represents the number of girls.

Q4. Here are the ingredients needed to make 10 pancakes.

Matthew makes 30 pancakes.
Work out how much flour he uses.

Q5. Pavel and Katie share some sweets in the ratio 3 : 8
     Katie gets 32 sweets.

     How many sweets does Pavel get?

Q6. Liam, Sarah and Emily shared £192 in the ratio 2 : 3 : 7.
     How much money did each get?

Q7. Stacey went to the theatre in Paris.
     Her theatre ticket cost €96
     The exchange rate was £1 = €1.20

     Work out the cost of her theatre ticket in pounds (£).

Q8. Sam draws a plan of his bedroom.
His desk is 1.8 m long.
On the plan, his desk is 12 cm long.

Write the scale of the map as a ratio in its simplest form.

Q9. The gradient of a hill is 3 : 5.
Write this in the form 1 : *n*, correct to 2 decimal places.

Q10. Two variables, *X* and *Y*, are in direct proportion.
The table shows corresponding values of *X* and *Y*.

X	10	35	*Q*
Y	18	*P*	9.9

Work out the values of *P* and *Q*.

Topics listed in objectives
- Express the division of a quantity into a number parts as a ratio;
- Write ratios in form 1 : *m* or *m* : 1 and to describe a situation;
- Write ratios in their simplest form, including three-part ratios;
- Divide a given quantity into two or more parts in a given part : part or part : whole ratio;
- Use a ratio to find one quantity when the other is known;
- Write a ratio as a fraction and as a linear function;
- Identify direct proportion from a table of values, by comparing ratios of values;
- Use a ratio to compare a scale model to real-life object;
- Use a ratio to convert between measures and currencies, e.g. £1.00 = €1.36;
- Scale up recipes;
- Convert between currencies.

Answers

Q1.   13 : 7

Q2.   Ahmed $\frac{3}{8}$, Kate $\frac{5}{8}$

Q3. $y = 2x$

Q4.   360g

Q5.   12

Q6.   Liam £32, Sarah £48, Emily £112

Q7.   £80

Q8.   1 : 15

Q9.   1 : 1.67

Q10. $P = 63$, $Q = 5.5$