

Number 1

Calculator allowed for questions 20 to 25

MATHSWATCH

Foundation



Qu 1 to 19

Higher



Qu 20 to 25

Time: 45 minutes

Name: _____

SOLUTIONS

	<i>Grade</i>	<i>Title of clip</i>	<i>Marks</i>	<i>Score</i>	<i>Percentage</i>
Clip 44	D	Factors, multiples, primes (qu. 1)	9	_____	_____
Clip 45	D	Evaluate powers (qu. 2)	3	_____	_____
Clip 46	D	Squares, cubes, roots (qu. 3)	8	_____	_____
Clip 47	D	Equivalent fractions (qu. 4, 5)	4	_____	_____
Clip 48	D	Simplify fractions (qu. 6)	4	_____	_____
Clip 49	D	Order fractions (qu. 7)	3	_____	_____
Clip 52	D	Find % without calculator (qu. 8)	6	_____	_____
Clip 54	D	Change to %, no calculator (qu. 9)	4	_____	_____
Clip 55	D	Find fraction of amount (qu. 10)	4	_____	_____
Clip 56	D	Add and subtract fractions (qu. 11)	6	_____	_____
Clip 57	D	Multiply and divide fractions (qu. 12)	6	_____	_____
Clip 58	D	Change fraction to decimal (qu. 13)	2	_____	_____
Clip 59	D	BODMAS (qu. 14, 15)	7	_____	_____
Clip 60	D	Decimal multiplication (qu. 16)	5	_____	_____
Clip 61	D	Ratio (qu. 17, 18, 19)	4	_____	_____
Clip 50	D	Value for money (qu. 20)	3	_____	_____
Clip 51	D	Find % with calculator (qu. 21)	6	_____	_____
Clip 53	D	Change to % with calculator (qu. 22)	4	_____	_____
Clip 63	D	Hard calculator questions (qu. 23)	4	_____	_____
Clip 62	D	Ratio - recipe questions (qu. 24)	5	_____	_____
Clip 64	D	Real-life number questions (qu. 25)	3	_____	_____

Out of 100

TOTAL
SCORE _____

FINAL
PERCENTAGE

%

1) a) Write down all the factors of 10

1, 2, 5, 10 2

b) Write down the first four multiples of 5

5, 10, 15, 20 2

c) Write down the first five prime numbers

2, 3, 5, 7, 11 2

d) 3, 5, 6, 7, 8, 10, 15, 17, 20

From the numbers above write down

(i) A prime number bigger than 7 17 1

(ii) Five factors of 30 3, 5, 6, 10, 15 1

(iii) Three multiples of 3 3, 6, 15 1

2) a) Evaluate $2^4 = 2 \times 2 \times 2 \times 2 = 16$

b) Which is bigger and by how much? 2^5 or 5^2

2^5 is bigger by 7 2
 $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$
 $5^2 = 5 \times 5 = 25$

3) a) What is the square of 7? $7^2 = 49$ 1

b) What is the cube of 5? $5^3 = 125$ 1

c) What is the positive square root of 64? $\sqrt{64} = 8$ 1

d) What is the cube root of 1000? $\sqrt[3]{1000} = 10$ 1

e) 20, 25, 27, 30, 40, 600, 900

From these numbers find

(i) Two square numbers 25 1 900 1

(ii) A cube number 27 1

(iii) The square root of 400 20 1

4) Write the correct numbers in the boxes.

a) $\frac{2}{3} = \frac{\boxed{4}}{6}$ 1

b) $\frac{3}{7} = \frac{9}{\boxed{21}}$ 1

5) Which of the following fractions are equivalent to $\frac{2}{5}$?

$\frac{7}{10}$ $\frac{8}{20}$ $\frac{4}{10}$ $\frac{3}{6}$ $\frac{20}{50}$ $\frac{21}{51}$

$\frac{8}{20}$, $\frac{4}{10}$, $\frac{20}{50}$ 2

6) Cancel the following fractions to their simplest form

a) $\frac{6}{8}$ $\frac{3}{4}$ 2 b) $\frac{24}{60}$ $\frac{2}{5}$ 2

7) Put the following fractions in order of size, smallest to largest.

$\frac{11}{12}$ $\frac{1}{2}$ $\frac{2}{3}$ $\frac{3}{4}$ $\frac{1}{6}$

compare all fractions making them "twelfths"

$\frac{1}{6}$, $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{11}{12}$ 3

8) a) Find 10% of £86 £8.60 2

b) Find 35% of £800 £280 2

c) Find 17.5% of £120 £21 2

9) a) In a class of 25 students, 14 are girls and 11 are boys.

$\frac{14}{25} = \frac{56}{100}$

What percentage of the class are girls? 56% 2

b) Find 12 as a percentage of 40. 30% 2

$\frac{12}{40} = \frac{6}{20} = \frac{30}{100}$

- 10) a) Find $\frac{3}{5}$ of 60 36 2
 b) Find $\frac{2}{3}$ of 3000 2000 2

11) Work out the following:

a) $\frac{1}{4} + \frac{1}{2} = \frac{1}{4} + \frac{2}{4} = \frac{3}{4}$ 2

b) $\frac{2}{3} - \frac{1}{5} = \frac{10}{15} - \frac{3}{15} = \frac{7}{15}$ 2

c) $1\frac{2}{5} + 3\frac{1}{2} = 4\frac{9}{10}$ 2

$1+3 = \underline{4}$ } $\frac{2}{5} + \frac{1}{2} = \frac{4}{10} + \frac{5}{10} = \frac{9}{10}$

12) Work out the following:

a) $\frac{2}{3} \times \frac{4}{5} = \frac{2 \times 4}{3 \times 5} = \frac{8}{15}$ 2

Keep Flip Change → b) $\frac{2}{9} \div \frac{2}{3} = \frac{2}{9} \times \frac{3}{2} = \frac{6}{18} = \frac{1}{3}$

c) $2\frac{4}{5} \times 1\frac{3}{7} = 4$ 2

$= \frac{14}{5} \times \frac{10}{7} = \frac{140}{35} = \underline{4}$

13) Change the following fractions to decimals:

a) $\frac{1}{2} = \underline{0.5}$ 1

b) $\frac{4}{5} = \underline{0.8}$ 1

14) Work out the answers to:

a) $4 + \overset{4+15}{(5 \times 3)} = \underline{19}$ 2

b) $3^2 + \overset{9+4}{2^2} = \underline{13}$ 2

c) $\frac{7+3}{5} = \underline{2}$ 2

$\frac{10}{5} = \underline{2}$

15) Put brackets in the following to make the sum correct

$(2 + 3) \times 5 = 25$ 1

- 16) a) A book costs £4.25.
 How much would 13 of them cost?

show working!

£ 55.25 3

- b) What is 2.1×0.6 ?

show working!

1.26 2

- 17) If the ratio of boys to girls in a class is $3 : 5$, what fraction of the class are boys?

$\frac{3}{8}$ 1

"8 parts"

- 18) Write the ratio 6 : 8 in its simplest form.

3 : 4 1

- 19) A model car is built to a scale of 1 : 10
 If the length of the model is 43cm what is the length of the real car in metres?

4.3m 2

This is the end of the non-calculator part of the assessment.

For the rest of the questions a calculator can be used.

20) Which is the best value for money?

150g of chocolate for £2.55

or 125g of the same chocolate for £2.00

All working must be shown.

$$255 \div 150 = 1.7 \text{ pence/gram}$$

$$200 \div 125 = 1.6 \text{ pence/gram}$$

Best value is 125g for £2.00 3

21) a) Find 13% of £2000 £ 260 2

b) Find 26.7% of £89 to the nearest penny £ 23.76 2

c) The price of a pair of trainers is £60 + VAT at 17.5%

What is the total price of the trainers? £ 70.50 2

22) a) Change 16 out of 45 to a percentage. = $\frac{16}{45} = 0.35$

Give your answer to 1 decimal place = 35.6% 2

b) In a town of 138000 people, 61500 are female.

What percentage are female? $\frac{61500}{138000} = 0.44565\dots$

Give your answer to 1 decimal place 44.6% 2

23) Find the value of the following. Write down all the numbers on your calculator.

a) $\sqrt{182.25} + 1.75^2 = \underline{16.5625}$ 2

b) $\frac{5.8^2 - 1.3}{\sqrt{7.6 + 1.4}} = \underline{10.78}$ 2

24) This is a list of ingredients to make rhubarb crumble.

-3

<p>For 6 people</p> <p>120g of plain flour</p> <p>24g of almonds</p> <p>150g of sugar</p> <p>90g of butter</p> <p>12 sticks of rhubarb</p>

2 people

40g flour

8g almonds

50g sugar

30g butter

4 sticks rhubarb

Work out the amount of ingredients needed for 4 people.

80 g of plain flour 1

16 g of almonds 1

100 g of sugar 1

60 g of butter 1

8 sticks of rhubarb 1

25) The cost of 1.5kg of apples is £0.84

Apples 3kg $\rightarrow 0.84 \times 2 = \underline{£1.68}$

The total cost of 3kg of apples and 2kg of pears is £2.44

$$\underline{£2.44} - \underline{£1.68} = \underline{£0.76} = \underline{2 \text{ kg pears}}$$

Work out the cost of 1kg of pears.

$$\underline{£0.76} \div 2 = \underline{£0.38}$$

1kg of pears is £0.38 3

or

38 pence

1) Work out

(i) 35% of £60.

£21 1

(ii) 17.5% of £80.

£14 1

2) a) Sarah scored 13 marks out of a possible 20 marks in a science homework.

What was her score as a percentage?

$\frac{13}{20} = 0.65$ 65% 1

b) In an English test, Sarah got 24 out of 40 marks.

Change this score to a percentage.

$\frac{24}{40} = 0.6 = \underline{\underline{60\%}}$ 2

3) There are 800 students at Medway School.

55% of these students are girls.

a) Work out 55% of 800.

440 1

There are 176 students in Year 10.

b) Work out 176 out of 800 as a percentage.

$\frac{176}{800} = 0.22$ 22% 2

4) A spade costs £20 plus 15% VAT.

Calculate the total cost of the spade.

15% = £3 TOTAL = £23 2

5) Increase £680 by 10%.

10% = £68 TOTAL = £748 2

6) Write 120 as the product of its prime factors.

$2 \times 2 \times 2 \times 3 \times 5 = 2^3 \times 3 \times 5$ 2

7) a) Find the HCF of 40 and 90.

10 2

b) Find the LCM of 40 and 90.

360 2

8) a) Write 271 000 000 in standard form.

2.71×10^8 ~~271000000~~ 1

b) Write 3.8×10^5 as a normal number.

380000 1

c) Write 0.00073 in standard form.

7.3×10^{-4} 1

d) Write 2.9×10^{-6} as a normal number.

0.0000029 1

9) Work out the value of $(7 \times 10^4) \times (3 \times 10^5)$.

Give your answer in standard form.

$7 \times 3 = 21 = \frac{2.1 \times 10^1}{10^1}$
 $10^4 \times 10^5 = 10^9$ $\rightarrow = \underline{\underline{2.1 \times 10^{10}}}$ 2

10) Write the recurring decimal $0.\dot{8}\dot{1}$ as an exact fraction in its simplest form.

$\frac{81}{99} = \frac{9}{11}$ $\frac{9}{11}$ 2

11) Work out the answer to

(i) -6×-4 24 1

(ii) $-12 \div 3$ -4 1

(iii) $18 \div -2$ -9 1

(iv) -8×3 -24 1

(v) $-20 \div -5$ 4 1

12) Work out the answer to

(i) $7 \div 0.2$
 $= 7 \times 5 = \underline{35}$ 1

(ii) $60 \div 0.25$
 $= 60 \times 4 = \underline{240}$ 1

13) James has £15 to spend on CD holders.

What is the greatest amount he can buy if each CD holder costs 25p?

$15 \times 4 = 60$ 60 2

14) Estimate the value of 73×48

$70 \times 50 = \underline{3500}$ 1

15) Estimate the value of

(i) $\frac{22 \times 3.84}{0.207} \approx \frac{20 \times 4}{0.2} = \underline{400}$ 2

(ii) $\frac{6.79 \times 412}{0.523} \approx \frac{7 \times 400}{0.5} = \underline{5600}$ 2

16) Work out the following, giving all answers in their simplest form:

a) $\frac{1}{3} + \frac{3}{5} = \frac{5}{15} + \frac{9}{15} = \frac{14}{15}$ 2

KEEP FLIP CHANGE → b) $3\frac{3}{4} \div \frac{3}{5} = \frac{15}{4} \times \frac{5}{3} = \frac{15 \times 5}{4 \times 3} = \frac{75}{12}$
 $= 6\frac{3}{12}$
 $= 6\frac{1}{4}$ 2

c) $3\frac{2}{5} - 1\frac{3}{4}$
 $= \frac{17}{5} - \frac{7}{4} = \frac{68}{20} - \frac{35}{20} = \frac{33}{20} = 1\frac{13}{20}$ 2

d) $2\frac{1}{2} \times 3\frac{3}{4}$
 $= \frac{5}{2} \times \frac{15}{4} = \frac{5 \times 15}{2 \times 4} = \frac{75}{8} = \underline{9\frac{3}{8}}$ 2

17) Some students watch just one of three TV soaps.

$\frac{1}{5}$ watch Hollyoaks. $\frac{1}{5} = \frac{8}{40}$

$\frac{3}{8}$ watch Eastenders. $\frac{3}{8} = \frac{15}{40}$

What fraction of the students watch Coronation st.?

$\frac{40}{40} - \frac{8}{40} - \frac{15}{40} = \frac{17}{40}$ 2

18) Work out the area of this triangle.



Base x Height
 $\frac{5}{8} \times 6\frac{2}{5} = \frac{5}{8} \times \frac{32}{5} = \frac{5 \times 32}{8 \times 5} = \frac{160}{40} = \underline{4}$ 2

Area = $\frac{b \times h}{2} = \frac{4}{2} = \underline{2 \text{ cm}^2}$

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