School Name

Mathematics Test 2017

Year 8

Rational Numbers

Non Calculator Section

Name_____

Skills and Knowledge Assessed:

- Connect fractions, decimals and percentages and carry out simple conversions (ACMNA157)
- Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies (ACMNA183)
- Investigate terminating and recurring decimals (ACMNA184)

Answer all questions in the spaces provided on this test paper by:

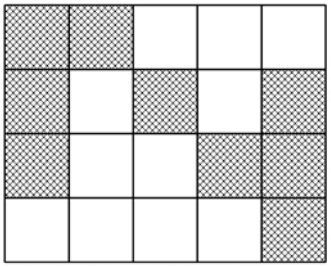
Writing the answer in the box provided.

or

Shading in the bubble for the correct answer from the four choices provided.

Show any working out on the test paper. Calculators are **not** allowed.

1. The fraction of the diagram which is shaded is :

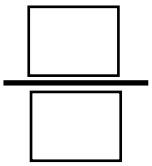


- ☐ $\frac{9}{20}$
- ☐ $\frac{11}{20}$
- ☐ $\frac{9}{40}$
- ☐ $\frac{9}{11}$

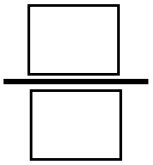
2. Which decimal is equivalent to $\frac{45}{100}$?

☐ 0.0045 ☐ 0.045 ☐ 0.45 ☐ 4.5

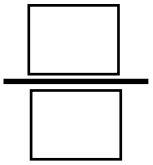
3. Simplify the fraction $\frac{12}{30}$.



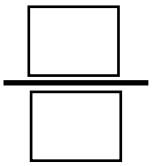
4. $\frac{5}{12} + \frac{2}{12} = ?$



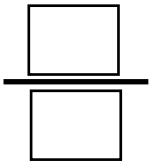
5. $\frac{2}{3} \times \frac{4}{5} = ?$



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



7. $\frac{7}{10} - \frac{3}{5} = ?$

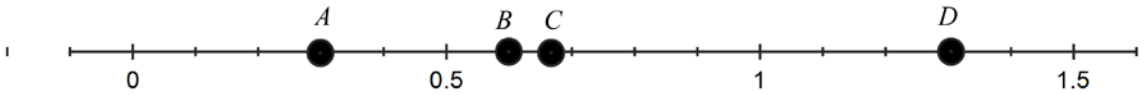


8. What decimal is equivalent to $\frac{41}{50}$?

9. $0.84 + 0.37 = ?$

☐ 1.11 ☐ 1.21 ☐ 2.11 ☐ 2.21

10. Which of the points represent the position of $\frac{3}{5}$ on the number line?



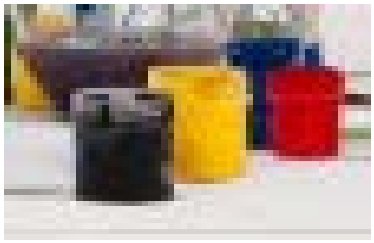
☐ Point *A* ☐ Point *B* ☐ Point *C* ☐ Point *D*

11. Which fraction is equivalent to 0.48?

☐ $\frac{4}{8}$ ☐ $\frac{3}{5}$ ☐ $\frac{11}{25}$ ☐ $\frac{12}{25}$

12. Four containers of paint contain 0.45 L, 0.86 L, 1.24 and 1.32 L.

What is the total amount of paint in litres?



13. Find $\frac{5}{6}$ of 30 kg.

14. Which fraction is equivalent to 64% ?

☐ $\frac{7}{10}$ ☐ $\frac{8}{10}$ ☐ $\frac{3}{5}$ ☐ $\frac{16}{25}$

15. $9.5 + 2.35 + 5 = ?$

16. Ingrid has a stamp collection of 125 stamps.

Of these stamps, 85 are Australian stamps.

What percentage of Ingrid's stamps are Australian?

17. $2.4 \times 0.8 = ?$

18. What is the reciprocal of 3.6 ?

☐ $\frac{5}{16}$ ☐ $\frac{7}{16}$ ☐ $\frac{5}{18}$ ☐ $\frac{7}{18}$

19. What decimal number is represented by the expanded notation:
$4 \times \frac{1}{10} + 9 \times \frac{1}{1000} + 1 \times \frac{1}{10\,000}$.

☐ 0.4091 ☐ 0.4901 ☐ 0.491 ☐ 4.901

20. $14 - 1.069 = ?$

21. $1\frac{3}{5} \times 1\frac{1}{6} = ?$

22. $2\frac{1}{3} - 1\frac{3}{5} = ?$

☐ $\frac{11}{15}$ ☐ $\frac{4}{5}$ ☐ $1\frac{4}{11}$ ☐ $1\frac{7}{15}$

23. A cake costs $18.00 to make and is sold for a profit of 65% on the cost price.

What was the selling price of the cake?

24. Flour makes up 45% of the mass of a recipe.

If there is 0.54 kg of flour in the recipe, what is the total mass of all the ingredients?

School Name

Mathematics Test 2017

Rational Numbers

Year 8

Calculator Allowed
Short Answer Section

Name_____

Answer all questions in the spaces provided on this test paper by:

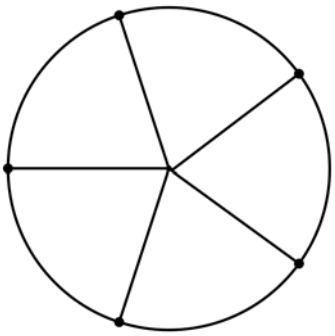
Writing the answer in the box provided.

or

Shading in the bubble for the correct answer from the four choices provided.

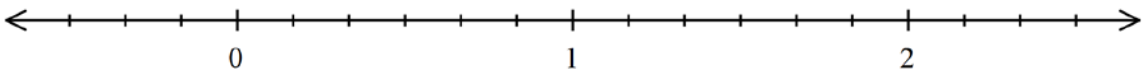
Show any working out on this test paper. Calculators are allowed.

1. Shade 0.6 of the circle shown.



2. Round 0.0298 correct to the nearest hundredth.

3. Mark the position of $1\frac{2}{3}$ on the number line below.



4. Write 0.925 as a percentage.

5. Complete, giving your answer as a mixed number in simplest form;

$$\frac{4}{5} + \frac{5}{6} =$$

6. What is the product of three-fifths and two-thirds ?

☐ $\frac{1}{10}$ ☐ $\frac{3}{10}$ ☐ $\frac{2}{5}$ ☐ $\frac{5}{8}$

7. What is the value of the 8 digit in the number 16.481

☐ Hundredths ☐ Tenths ☐ Ten Thousandths ☐ Thousandths

8. $\frac{7}{20} - 0.25 = ?$

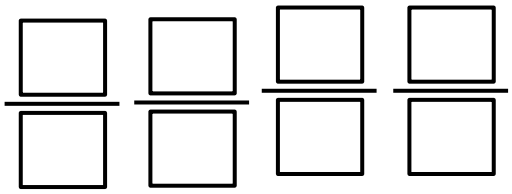
☐ $\frac{1}{20}$ ☐ $\frac{1}{10}$ ☐ $\frac{3}{20}$ ☐ $\frac{1}{5}$

9. $\frac{3}{4} \div 4\frac{1}{2} = ?$

☐ $\frac{1}{15}$ ☐ $\frac{1}{12}$ ☐ $\frac{1}{9}$ ☐ $\frac{1}{6}$

10. Write these fractions in order from smallest to largest.

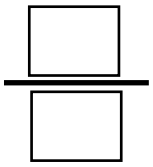
$\frac{3}{20}$, $\frac{4}{5}$, $\frac{7}{10}$, $\frac{13}{20}$



11. Write the decimals below in descending order.

0.25, 4.52, 0.155, 0.15 and 4.25.

12. What fraction is 18 hours of 2 days? (Answer in simplest form).



13. Write one of the symbols <, > or = in the boxes below to make true sentences.

a) $\frac{2}{3}$ ☐ 0.6 b) $\frac{4}{5}$ ☐ 0.8

14. Four cats have masses of 1.25 kg, 1.1 kg, 0.625 kg and 0.98 kg.

What is the mass of the four cats together?

15. $0.0458 \times 1000 = ?$

☐ 0.000 045 8 ☐ 4.58 ☐ 45.8 ☐ 458

16. Damien divides a pizza which has a mass of 2.5 kg into 8 equal slices.

What is the mass (in kg) of each slice?

17. The cost of a lounge chair is $181.50, including GST.

What was the price before GST was added?

18. Margie took 1200 pictures on a recent photo shoot.

Of these she printed 360 different pictures to sell at the markets.

She sold 60% of those pictures that she took to the markets.

What percentage of the pictures that she took on the shoot, were sold?

☐ 12% ☐ 15% ☐ 16% ☐ 18%

19. This year the percentage of females studying maths at Bass University increased by 5% compared to last year.

Last year there was an increase of 8% in the number of females studying maths, compared to the previous year.

If there are 1134 females studying maths this year, how many were studying maths two years ago?

20. Which of the following is in ascending order.

☐ $0.54,\ \frac{3}{8},\ 40\%,\ 0.6,\ \frac{11}{20}$ ☐ $\frac{3}{8},\ 40\%,\ 0.54,\ \frac{11}{20},\ 0.6$

☐ $40\%,\ 0.54,\ \frac{3}{8},\ \frac{11}{20},\ 0.6$ ☐ $40\%,\ \frac{3}{8},\ 0.54,\ \frac{11}{20},\ 0.6$

21. Which decimal is equal to $\frac{16}{99}$?

☐ $0.\dot{1}\dot{6}$ ☐ $0.1\dot{6}$ ☐ 0.16 ☐ $0.\dot{6}\dot{1}$

22. A recurring decimal is written as $0.\dot{7}4\dot{1}$.

The decimal could also be written as:

☐ 0.74111111… ☐ 0.741414141…. ☐ 0.741741741… ☐ 0.74171717…

23. What fraction is the same as $0.5\dot{2}$?

☐ $\frac{47}{90}$ ☐ $\frac{57}{90}$ ☐ $\frac{47}{99}$ ☐ $\frac{57}{99}$

24. If I divide a number greater than 10 by a number between 0 and 1, which is true?

☐ The answer will always be smaller than 10.

☐ The answer will always be equal to 10.

☐ The answer will always be larger than 10.

☐ The answer could be smaller or larger than 10.

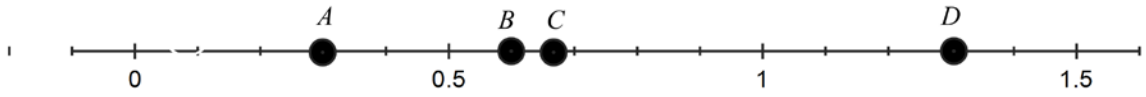
School Name
Mathematics Test 2017

Year 8 **Rational Numbers**

Non Calculator Section

ANSWERS

Question	Working and Answer
1.	9 parts out of 20, so $\frac{9}{20}$. **1st Answer.**
2.	$\frac{45}{100} = 0.45$ **3rd Answer**
3.	$\frac{12}{30} = \mathbf{\frac{2}{5}}$
4.	$\frac{5}{12} + \frac{2}{12} = \mathbf{\frac{7}{12}}$
5.	$\frac{2}{3} \times \frac{4}{5} = \frac{2 \times 4}{3 \times 5} = \mathbf{\frac{8}{15}}$
6.	$\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{4}{3} = \mathbf{\frac{8}{15}}$
7.	$\frac{7}{10} - \frac{3}{5} = \frac{7}{10} - \frac{6}{10} = \mathbf{\frac{1}{10}}$
8.	$\begin{array}{r} \mathbf{0.82} \\ 50\overline{)41.00} \end{array}$

Question	Working and Answer
9.	$0.84 +$ 0.37 **1.21** **2nd Answer**
10.	$\frac{3}{5} = \frac{6}{10}$  Each division is tenths, so B is $\frac{6}{10}$. **2nd Answer**
11.	$0.48 = \frac{48}{100} = \frac{12}{25}$ **4th Answer**
12.	$0.45 +$ 0.86 1.24 1.32 **3.87 L**
13.	$\frac{5}{6}$ of 30 kg. $= \frac{5}{\cancel{6}\,1} \times \frac{\cancel{30}\,5}{1} = \frac{25}{1} =$ **25 kg**
14.	$64\% = \frac{64}{100} = \frac{32}{50} = \frac{16}{25}$ **4th Answer**
15.	$9.50 +$ 2.35 5.00 **16.85**

Question	Working and Answer
16.	$\%\ \text{Aust} = \frac{\cancel{85}\ 17}{\cancel{125}\ 5\ 1} \times \frac{\cancel{100}\ 4}{1} = 17 \times 4 = \mathbf{68\%}$
17.	$\begin{array}{r} 2.4 \times \\ \underline{0.8} \\ \mathbf{1.92} \end{array}$
18.	$3.6 = 3\frac{6}{10} = 3\frac{3}{5} = \frac{18}{5}$ $\text{Reciprocal} = \frac{5}{18}$ **3rd Answer**
19.	$4 \times \frac{1}{10} + 9 \times \frac{1}{1000} + 1 \times \frac{1}{10\,000} = 0.4091$ **1st Answer**
20.	$\begin{array}{r} 14.000 - \\ \underline{1.069} \\ \mathbf{12.931} \end{array}$
21.	$1\frac{3}{5} \times 1\frac{1}{6} = \frac{8}{5} \times \frac{7}{6}$ $= \frac{56}{30}$ $= 1\frac{26}{30}$ $= \mathbf{1\frac{13}{15}}$
22.	$2\frac{1}{3} - 1\frac{3}{5} = \frac{7}{3} - \frac{8}{5}$ $= \frac{35}{15} - \frac{24}{15}$ $= \frac{11}{15}$ **1st Answer**

Question	Working and Answer
23.	$\text{Profit} = \frac{65}{100} \times \frac{18}{1}$ $= \frac{13}{\cancel{20}\ 10} \times \frac{\cancel{18}\ 9}{1}$ $= \frac{117}{10}$ $= \$11.70$ $\text{Selling price} = \$18.00 + \$11.70$ $= \$29.70$
24.	45% of ingredients = 0.54 kg 5% of ingredients = $0.54 \div 9 = 0.06$ kg 100% of ingredients = $0.06 \times 20 =$ **1.2 kg**

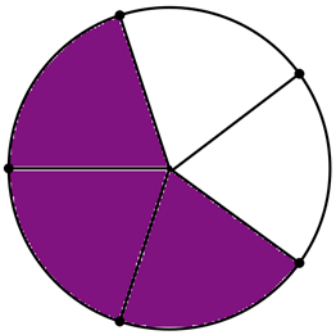
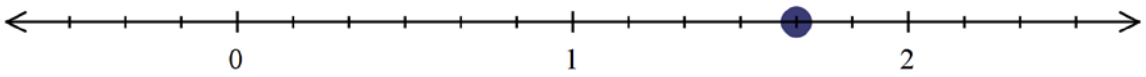
School Name
Mathematics Test 2017

Rational Numbers

Year 8

Calculator Allowed
Short Answer
Section

ANSWERS

Question	Working and Answer
1.	$0.6 = \frac{6}{10}$ $= \frac{3}{5}$ Shade any 3 sectors. 
2.	0.0298 = **0.03** (nearest 100th)
3.	 There are 6 divisions between whole numbers, so each is $\frac{1}{6}$. $1\frac{2}{3} = 1\frac{4}{6}$ so mark 4 divisions past 1
4.	$0.925 = 0.925 \times 100\%$ $= \mathbf{92.5\%}$

5.	$\frac{4}{5} + \frac{5}{6} = \frac{24+25}{30}$ $= \frac{49}{30}$ $= \mathbf{1\frac{19}{30}}$
6.	$\frac{3}{5} \times \frac{2}{3} = \frac{6}{15} = \frac{2}{5}$ **3rd Answer**
7.	In the number 16.481, the 8 is in the 2nd decimal place which is hundredths **1st Answer**
8.	$\frac{7}{20} - 0.25 = 0.35 - 0.25$ $= 0.1$ $= \frac{1}{10}$ **2nd Answer**
9.	$\frac{3}{4} \div 4\frac{1}{2} = \frac{3}{4} \div \frac{9}{2}$ $= \frac{3}{4} \times \frac{2}{9}$ $= \frac{1}{6}$ **4th Answer**
10.	Converting all to 20ths we get $\frac{3}{20}$, $\frac{16}{20}$, $\frac{14}{20}$, $\frac{13}{20}$ so in order they are $\mathbf{\frac{3}{20}, \frac{13}{20}, \frac{7}{10}, \frac{4}{5}}$
11.	**4.52, 4.25, 0.25, 0.155, 0.15**
12.	2 days = $2 \times 24 = 48$ hours Fraction = $\frac{18}{48} = \mathbf{\frac{3}{8}}$

13.	a) $\frac{2}{3} = 0.\dot{6}$ $\frac{2}{3} \boxed{>} 0.6$ b) $\frac{4}{5} = \frac{8}{10}$ $\frac{4}{5} \boxed{=} 0.8$
14.	$1.250 +$ 1.100 0.625 $\underline{0.980}$ **3.955**
15.	$0.0458 \times 1000 = 45.8$ (move point 3 places to the right) **3rd Answer**
16.	**0.3125 kg** $8\overline{)2.5000}$
17.	Cost including GST = 110% of pre GST price pre GST price $= \frac{181.50}{110} \times 100 = \frac{181.50}{1.1}$ = **$165.00**
18.	60% of 360 were sold = $0.6 \times 360 = 216$ students. Percentage of pictures sold overall = $\frac{216}{1200} \times 100 = 18\%$ **4th Answer**
19.	Number of females last year = $1134 \div 1.05 = 1080$ Number of females previous year = $1080 \div 1.08 =$ **1000**
20.	$0.54 = 54\%$ $\frac{3}{8} = 37.5\%$ 40% $0.6 = 60\%$ $\frac{11}{20} = 55\%$ In order $\frac{3}{8}$, 40%, 0.54, $\frac{11}{20}$, 0.6 **2nd Answer**

21.	$\frac{16}{99} = 16 \div 99 = 0.161616... = 0.\dot{1}\dot{6}$ **1st Answer**
22.	$0.\dot{7}4\dot{1} = 0.741741741...$ **3rd Answer**
23.	$\frac{47}{90} = 0.5222222.. = 0.5\dot{2}$ **1st Answer**
24.	If we are dividing by a number between 0 an 1, this will go into the number more times than 1 will, as it is smaller. So the result will be larger than the original number which was greater than 10, result is also greater than 10. e.g. let smaller number be 0.5 and larger number by 15. $15 \div 0.5 = 30$, since 0.5 goes into each whole, twice. **3rd Answer**