High School
Mathematics Test 2015

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.

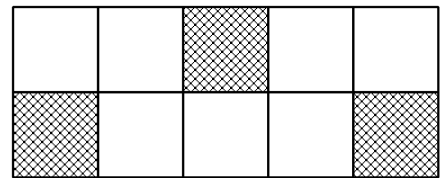Show any working out on the test paper.   Calculators are **not** allowed.

1.

The fraction of the diagram which is shaded is :

☐ $\dfrac{3}{7}$ ☐ $\dfrac{3}{10}$

☐ $\dfrac{7}{10}$ ☐ $\dfrac{7}{20}$

2.

Which decimal is equivalent to $\dfrac{19}{1000}$?
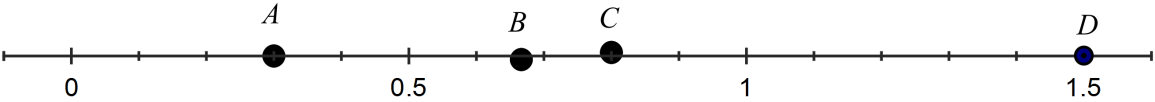
☐ 0.0019   ☐ 0.019   ☐ 0.19   ☐ 1.9

3.

Simplify the fraction $\dfrac{15}{20}$.

4.

$\dfrac{7}{20} + \dfrac{2}{20} = ?$

5.	$\dfrac{1}{4} \times \dfrac{3}{8} = ?$
6.	$\dfrac{1}{8} \div \dfrac{3}{5} = ?$
7.	$\dfrac{19}{20} - \dfrac{2}{5} = ?$
8.	What decimal is equivalent to $\dfrac{7}{20}$?

9. $0.76 + 0.65 = ?$

☐ 0.41   ☐ 1.31   ☐ 1.41   ☐ 14.1

10. Which of the points represent the position of $\dfrac{2}{3}$ on the number line?

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

11. Which fraction is equivalent to 0.55?

☐ $\dfrac{11}{20}$ ☐ $\dfrac{11}{25}$ ☐ $\dfrac{11}{40}$ ☐ $\dfrac{11}{50}$

12.	Three boxes have masses of 0.25 kg, 0.84 kg and 2.36 kg. What is the total mass of the boxes?

13.	Find $\frac{3}{8}$ of 48 litres.

14.	Which fraction is equivalent to 45% ? ☐ $\frac{7}{20}$ ☐ $\frac{9}{20}$ ☐ $\frac{11}{20}$ ☐ $\frac{13}{20}$

15.	$6.3 - 3.68 = ?$

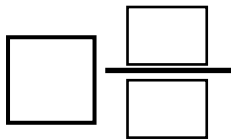| 16.	In September Mr Robinson made 60 wooden toys in his workshop. In October he made 72 wooden toys. What is the percentage increase in October compared to September?

17.	$3.24 \times 7 = ?$

18.	Simplify $\left(\frac{5}{6}\right)^2$. ☐ $\frac{25}{36}$ ☐ $\frac{10}{12}$ ☐ $\frac{5}{18}$ ☐ $2\frac{1}{12}$

19. What decimal number is represented by the expanded notation: $7 \times 1 + 8 \times \dfrac{1}{10} + 6 \times \dfrac{1}{1000}$?

☐ 0.7806   ☐ 7.086   ☐ 7.806   ☐ 7.86

20. $1\dfrac{3}{8} \times 1\dfrac{4}{5} = ?$

21. $3\dfrac{1}{8} - 1\dfrac{5}{6} = ?$

☐ $\dfrac{7}{24}$ ☐ $\dfrac{7}{12}$ ☐ $1\dfrac{1}{3}$ ☐ $1\dfrac{7}{24}$

22. A car dealer bought a used car for $8 000 and later sold it for $12 500.

What was the percentage profit when selling the car?

☐ 12.5%   ☐ 45%

☐ 56.25%   ☐ 80%

23. A store sells a packet of cereal for $5.20.

The store added a 30% profit to its cost price to achieve the selling price.

What was the cost price?

☐ $1.30   ☐ $2.00   ☐ $2.60   ☐ $4.00

24. In a sporting crowd, 24% are found to be wearing football jerseys.

If 6000 were wearing football jerseys, how many were in the crowd?

High School
Mathematics Test 2015

Rational Numbers

Year 8

Calculator Allowed
Short Answer
Section

Name_____

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

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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.

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1. Shade 0.4 of the shape shown.

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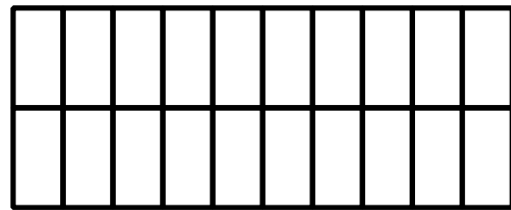
2. Round 37.2579 correct to the nearest hundredth.

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3. Mark the position of $\dfrac{3}{4}$ on the number line below.

0   1

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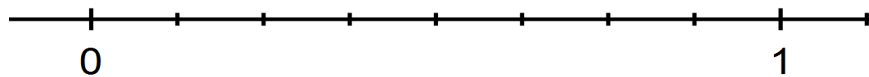
4. Write 9% as a decimal number.

5.	Complete, giving your answer as a mixed number in simplest form; $$\frac{1}{5} + \frac{3}{8} =$$
6.	$$\frac{2}{3} \times \frac{1}{8} = \ ?$$ ☐ $\frac{1}{12}$ ☐ $\frac{1}{9}$ ☐ $\frac{1}{8}$ ☐ $\frac{1}{6}$
7.	What is the value of the 8 digit in the number 13.2187? ☐ Hundredths ☐ Tenths ☐ Ten Thousandths ☐ Thousandths
8.	Complete, giving your answer in simplest form; $$\frac{7}{12} - \frac{1}{3} =$$
9.	$$\frac{5}{8} \div \frac{5}{6} = \ ?$$ ☐ $\frac{5}{24}$ ☐ $\frac{3}{8}$ ☐ $\frac{3}{4}$ ☐ $1\frac{1}{3}$
10.	Write these fractions in order from smallest to largest. $$\frac{1}{2}, \ \frac{1}{4}, \ \frac{1}{5}, \ \frac{1}{3}$$
11.	Write the decimals below in ascending order. 0.15, 2.15, 0.125, 0.002 and 1.2.

12.	What fraction is 25 seconds of 1 minute and 15 seconds? (Answer in simplest form).

$$\frac{}{}$$

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

a) $\dfrac{3}{4}$ ☐ 0.75   b) $\dfrac{5}{8}$ ☐ 0.6

14.	Four soft drink containers are labelled as holding 0.375 litres, 0.6 litres, 1.25 litres and 2 litres.
	How many litres do they hold altogether?

15.	83.1 ÷ 1000 = ?

☐ 0.00831   ☐ 0.0831   ☐ 0.831   ☐ 8.31

16.	Martin divides a cake which has a mass of 1.53 kg into 9 equal pieces.
	What is the mass (in kg) of each piece?

17.	A car costs $28 160 from a dealer, including GST.
	A charity buys the car and does not have to pay GST.
	How much would they pay for the car?

18.	There are 250 students in Year 8 at Ashleigh High School. A group of 40 students from Year 8 went on an excursion. Of this group, 7.5% were given commendations for helping with the organisation of the excursion. What percentage of the school year were given these commendations? ☐ 1.2% ☐ 1.5% ☐ 2.4% ☐ 3.0%
19.	In 2014, Declan's income from his hobby decreased by 27% compared to 2013. His income in 2013 was $1 360. If it continued to decrease at this annual percentage rate, what would be his income in 2015? Answer to nearest 5 cents.
20.	Write the following in order from smallest to largest. $0.37, \ \dfrac{3}{8}, \ 36\%, \ 0.385 \ $ and $\ \dfrac{73}{200}.$
21.	Which decimal is equal to $\dfrac{41}{90}$? ☐ $0.4\dot{5}$ ☐ $0.\dot{4}\dot{5}$ ☐ $0.\dot{5}$ ☐ $0.5\dot{1}\dot{1}$
22.	A recurring decimal is written as $0.8\dot{0}\dot{6}$. The decimal could also be written as: ☐ 0.806806806… ☐ 0.806060606…. ☐ 0.80666666… ☐ 0.806

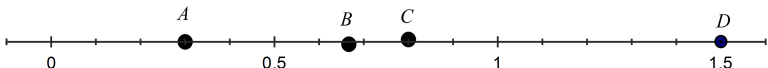|	
23.	What fraction is the same as $0.7\overset{..}{5}$? ☐ $\dfrac{5}{18}$ ☐ $\dfrac{25}{33}$ ☐ $\dfrac{7}{9}$ ☐ $\dfrac{70}{99}$
24.	If I calculate the square of a number between 0 and 1, which is true? ☐ The answer will always be smaller than the original number. ☐ The answer will always be the same as the original number. ☐ The answer will always be larger than the original number. ☐ The answer could be smaller or larger than the original number.

High School
Mathematics Test 2015

Year 8	*Rational Numbers*	Non Calculator Section
	ANSWERS	

No.	WORKING	ANSWER
1.	3 parts out of 10, so $\dfrac{3}{10}$.	2nd answer
2.	$\dfrac{19}{1000} = 0.019$	2nd answer
3.	$\dfrac{15}{20} = \dfrac{3}{4}$	$\dfrac{3}{4}$
4.	$\dfrac{7}{20} + \dfrac{2}{20} = \dfrac{9}{20}$	$\dfrac{9}{20}$
5.	$\dfrac{1}{4} \times \dfrac{3}{8} = \dfrac{1 \times 3}{4 \times 8} = \dfrac{3}{32}$	$\dfrac{3}{32}$
6.	$\dfrac{1}{8} \div \dfrac{3}{5} = \dfrac{1}{8} \times \dfrac{5}{3} = \dfrac{5}{24}$	$\dfrac{5}{24}$
7.	$\dfrac{19}{20} - \dfrac{2}{5} = \dfrac{19}{20} - \dfrac{8}{20} = \dfrac{11}{20}$	$\dfrac{11}{20}$
8.	$20 \overline{)7.00}^{\,0.35}$	0.35
9.	$0.76 + 0.65 = 1.41$	3rd answer

10.	$\frac{2}{3} \approx 0.66$ so B is nearest.	2nd answer
11.	$0.55 = \frac{55}{100} = \frac{11}{20}$	1st answer
12.	$\begin{array}{r} 0.25 \quad + \\ 0.84 \\ \underline{2.36} \\ 3.45 \end{array}$	3.45 kg
13.	$\frac{3}{8}$ of 48 litres $= \frac{3}{8} \times \frac{48}{1} = 3 \times 6 = 18$	18 litres
14.	$45\% = \frac{45}{100} = \frac{9}{20}$	2nd answer
15.	$\begin{array}{r} 6.30 \quad - \\ \underline{3.68} \\ 2.62 \end{array}$	2.62
16.	Increase = 12 toys % increase $= \frac{12}{60} \times 100 = \frac{1}{5} \times 100\% = 20\%$	20%
17.	$3.24 \times 7 = 22.68$	22.68
18.	$\left(\frac{5}{6}\right)^2 = \frac{5 \times 5}{6 \times 6} = \frac{25}{36}$	1st answer
19.	$7 \times 1 + 8 \times \frac{1}{10} + 0 \times \frac{1}{100} + 6 \times \frac{1}{1000} = 7.806$	3rd answer
20.	$1\frac{3}{8} \times 1\frac{4}{5} = \frac{11}{8} \times \frac{9}{5} = \frac{99}{40} = 2\frac{19}{40}$	$2\frac{19}{40}$

For row 10, the number line:

A is between 0 and 0.5, B is just before 0.75, C is at about 0.75, D is at 1.5.

0   0.5   1   1.5

21.	$3\dfrac{1}{8} - 1\dfrac{5}{6} = \dfrac{25}{8} - \dfrac{11}{6} = \dfrac{75}{24} - \dfrac{44}{24} = \dfrac{31}{24} = 1\dfrac{7}{24}$	4th answer
22.	Profit = 12500 – 8000 = 4500 $\%\text{ profit} = \dfrac{4500}{8000} \times 100$ $= \dfrac{45}{80} \times 100$ $= \dfrac{4500}{80}$ $= \dfrac{450}{8}$ = 56.25 %	3rd answer
23.	Profit = 30% so selling price = 130% of cost price 130% of cost price = $5.20 10% of cost price = 5.20 ÷ 13 = $0.40 100% of cost price = 0.40 × 10 = $4.00	4th answer
24.	24% of the crowd = 6000 people 1% of crowd = $\dfrac{6000}{24} = \dfrac{500}{2} = 250$ Number in crowd (100%) = 250 × 100 = 25 000 people	25 000

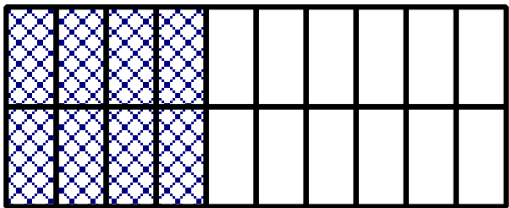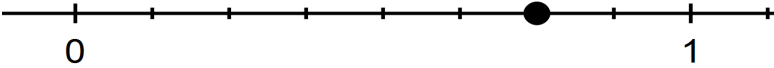# High School
Mathematics Test 2015

<table>
<tr><td rowspan="2">Year 8</td><td rowspan="2" align="center">*Rational Numbers*</td><td>Calculator Allowed</td></tr>
<tr><td>Short Answer Section</td></tr>
</table>

ANSWERS

No.	WORKING	ANSWER
1.		Any 8 sections.
2.	37.2579 = 37.26	37.26
3.	 There are 8 divisions between 0 and 1 so $\frac{1}{4}$ = 2 divisions $\frac{3}{4}$ = 2 × 3 = 6 divisions past 0	
4.	$9\% = \frac{9}{100} = 0.09$	0.09
5.	$\frac{1}{5} + \frac{3}{8} = \frac{8}{40} + \frac{15}{40} = \frac{23}{40}$	$\frac{23}{40}$
6.	$\frac{2}{3} \times \frac{1}{8} = \frac{2 \times 1}{3 \times 8} = \frac{2}{24} = \frac{1}{12}$	1st answer

7.	In the number 13.2187, the 8 is in the 3rd decimal place which is thousandths	4th answer
8.	$\dfrac{7}{12} - \dfrac{1}{3} = \dfrac{7}{12} - \dfrac{4}{12} = \dfrac{3}{12} = \dfrac{1}{4}$	$\dfrac{1}{4}$
9.	$\dfrac{5}{8} \div \dfrac{5}{6} = \dfrac{5}{8} \times \dfrac{6}{5} = \dfrac{30}{40} = \dfrac{3}{4}$	3rd answer
10.	$\dfrac{1}{5}, \dfrac{1}{4}, \dfrac{1}{3}, \dfrac{1}{2}$ Numerators are all 1, so largest denominator is the smallest fraction.	$\dfrac{1}{5}, \dfrac{1}{4}, \dfrac{1}{3}, \dfrac{1}{2}$
11.	0.002, 0.125, 0.150, 1.200, 2.150.	0.002, 0.125, 0.15, 1.2, 2.15.
12.	1 minute and 15 seconds = 60+15 = 75 seconds Fraction = $\dfrac{25}{75} = \dfrac{1}{3}$	$\dfrac{1}{3}$
13.	a) $\dfrac{3}{4}$ $\boxed{=}$ 0.75 b) $\dfrac{5}{8}$ = 0.625 $\dfrac{5}{8}$ $\boxed{>}$ 0.6	a) = b) >
14.	$\begin{array}{r} 0.375 + \\ 0.600 \\ 1.250 \\ \underline{2.000} \\ 4.225 \end{array}$	4.225 litres
15.	83.1 ÷ 1000 = 0.0831	2nd answer
16.	$9\overline{)1.53}$ = 0.17	0.17 kg
17.	Cost including GST = 110% of pre GST price pre GST price = $\dfrac{28160}{110} \times 100 = \dfrac{28160}{1.1}$ = \$25 600	\$25 600
18.	7.5% of 40 got commendations = 0.075 × 40 = 3 students. Percentage of year who got commendations = $\dfrac{3}{250} \times 100 = 1.2\%$	1st answer

19.	Decrease by 27% leaves 73% Income in 2014 = 73% of 1360 = $0.73 \times 1360 = \$992.8$ Income in 2015 = 73% of 992.80 = $0.73 \times \$992.8 = \$724.744$ $= \$724.75$ (nearest 5 cents)	$724.75
20.	$0.37 = 37\%$ $\dfrac{3}{8} = 37.5\,\%$ 36% $0.385 = 38.5\%$ $\dfrac{73}{200} = 36.5\%$ In order $36\%,\quad \dfrac{73}{200},\quad 0.37,\quad \dfrac{3}{8},\quad 0.385$	In order as shown
21.	$\dfrac{41}{90} = 41 \div 90 = 0.4555555... = 0.45\dot{5}$	1st Answer
22.	$0.8\dot{0}\dot{6} = 0.8060606...$	2nd answer
23.	$\dfrac{25}{33} = 0.75757575757 = 0.\dot{7}\dot{5}$	2nd answer
24.	e.g. $0.6 \times 0.6 = 0.36$ which is smaller $0.9 \times 0.9 = 0.81$ which is smaller	1st answer