

High School Mathematics Test 2015

Year 7

Fractions

Non Calculator
Test

Skills and Knowledge Assessed:

- Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line (ACMNA152)
- Solve problems involving addition and subtraction of fractions, including those with unrelated denominators (ACMNA153)
- Multiply and divide fractions and decimals using efficient written strategies and digital technologies (ACMNA154)
- Express one quantity as a fraction of another, with and without the use of digital technologies (ACMNA155)

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 the test paper. Calculators are **not** allowed.

1. Which pair of fractions both have a numerator of 8?

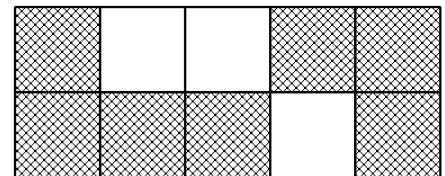
☐ $\frac{1}{8}$ and $\frac{8}{15}$
 ☐ $\frac{8}{9}$ and $\frac{7}{8}$
 ☐ $\frac{1}{8}$ and $\frac{5}{8}$
 ☐ $\frac{8}{9}$ and $\frac{8}{15}$

2. Which pair of fractions are both greater than $\frac{1}{2}$?

☐ $\frac{1}{8}$ and $\frac{1}{10}$
 ☐ $\frac{5}{6}$ and $\frac{3}{4}$
 ☐ $\frac{5}{6}$ and $\frac{1}{4}$
 ☐ $\frac{1}{8}$ and $\frac{7}{10}$

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

☐ $\frac{3}{7}$ ☐ $\frac{3}{10}$
☐ $\frac{7}{10}$ ☐ $\frac{7}{20}$



4.

The photo shows people at a party.

What fraction of them are wearing party hats?

☐ $\frac{1}{6}$

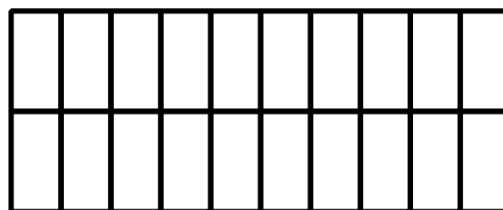
☐ $\frac{1}{4}$

☐ $\frac{1}{3}$

☐ $\frac{1}{2}$



5.

Shade $\frac{3}{5}$ of the shape shown.

6.

Write $\frac{8}{3}$ as a mixed number.

☐ $1\frac{1}{3}$

☐ $1\frac{2}{3}$

☐ $2\frac{1}{3}$

☐ $2\frac{2}{3}$

7.

Write $1\frac{5}{8}$ as an improper fraction.

8.

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

9.

The simplest equivalent fraction to $\frac{16}{24}$ is

☐ $\frac{1}{3}$

☐ $\frac{2}{3}$

☐ $\frac{4}{6}$

☐ $\frac{3}{5}$

10.

Which fraction is **not** equivalent to $\frac{3}{5}$?

☐ $\frac{15}{20}$

☐ $\frac{9}{15}$

☐ $\frac{6}{10}$

☐ $\frac{18}{30}$

11.	Write these fractions in order from smallest to largest. $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{1}{3}$	<div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div>
12.	$\frac{7}{20} + \frac{2}{20} = ?$	<div> <div></div> <div></div> </div>
13.	$\frac{1}{4} \times \frac{3}{8} = ?$	<div> <div></div> <div></div> </div>
14.	$\frac{1}{8} \div \frac{3}{5} = ?$	<div> <div></div> <div></div> </div>
15.	Find $\frac{3}{8}$ of 48 litres.	<div> <div></div> </div>
16.	Complete the missing numbers to make pairs of equivalent fractions. a) $\frac{15}{18} = \frac{\square}{6}$ b) $\frac{2}{5} = \frac{\square}{30}$	

17.

Nat was asked to write a list of fractions which were equivalent to $\frac{6}{8}$.

The list he wrote was:

$$\frac{3}{4}, \frac{12}{16}, \frac{5}{7}, \frac{9}{12}, \frac{15}{24}, \frac{21}{28}.$$

Which is true?

- ☐ They are all equivalent to $\frac{6}{8}$.
- ☐ One of them is not equivalent to $\frac{6}{8}$.
- ☐ Two of them are not equivalent to $\frac{6}{8}$.
- ☐ Three of them are not equivalent to $\frac{6}{8}$.

18.

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

a) $\frac{9}{12}$ $\frac{3}{4}$

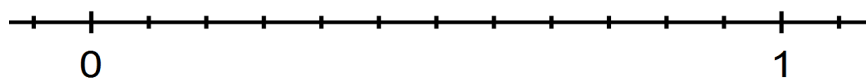
b) $\frac{5}{8}$ $\frac{11}{24}$

19.

What fraction is 15 kg of 200 kg? (Answer in simplest form).

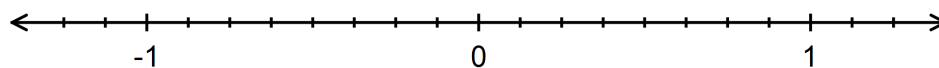
20.

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



21.

Mark the position of $-\frac{5}{8}$ on the number line below.



22.

Find the answer to the addition, giving your answer in simplest form;

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

23.

Judy only had $\frac{3}{5}$ of her books left after loaning some of them to friends.

When she posted a reminder to her friends, she got $\frac{3}{10}$ of her books back.

What fraction of her books did she have now?

☐

$\frac{2}{5}$

☐

$\frac{3}{5}$

☐

$\frac{9}{10}$

☐

$1\frac{4}{5}$

24.

Complete, giving your answer in simplest form;

$$\frac{1}{5} + \frac{3}{8} =$$

25.

$$\frac{2}{3} \times \frac{1}{8} = ?$$

☐

$\frac{1}{12}$

☐

$\frac{1}{9}$

☐

$\frac{1}{8}$

☐

$\frac{1}{6}$

26.

Complete, giving your answer in simplest form;

$$\frac{7}{12} - \frac{1}{3} =$$

27.

$$\frac{5}{8} \div \frac{5}{6} = ?$$

☐

$\frac{5}{24}$

☐

$\frac{3}{8}$

☐

$\frac{3}{4}$

☐

$1\frac{1}{3}$

28.

$$\frac{19}{20} - \frac{4}{5} = ?$$

☐

$\frac{3}{4}$

☐

$\frac{3}{20}$

☐

$\frac{3}{10}$

☐

1

29.

Simplify $\frac{7}{20} \times \frac{5}{8}$.

30.	Simplify $\left(\frac{5}{6}\right)^2$.	<input type="text"/> $\frac{25}{36}$	<input type="text"/> $\frac{10}{12}$	<input type="text"/> $\frac{5}{18}$	<input type="text"/> $2\frac{1}{12}$
31.	$\frac{4}{5} \div \frac{3}{4} = ?$	<input type="text"/> $\frac{3}{5}$	<input type="text"/> $\frac{15}{16}$	<input type="text"/> $1\frac{1}{16}$	<input type="text"/> $1\frac{1}{15}$
32.	What fraction is 25 seconds of 1 minute and 15 seconds? (Answer in simplest form).	<div><div></div><div></div></div>			
33.	Rewrite the numbers $\frac{5}{6}$, $\frac{7}{12}$, $\frac{3}{4}$, and $\frac{2}{3}$ in ascending order.	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>			
34.	Write the reciprocal of these numbers.	a) $\frac{7}{8}$ <div></div>	b) $1\frac{4}{5}$ <div></div>		
35.	$1\frac{1}{3} + 2\frac{1}{12} = ?$	<div><div></div><div></div></div>			
36.	$1\frac{3}{8} \times 1\frac{4}{5} = ?$	<div><div></div><div></div></div>			

37.	$3\frac{1}{8} - 1\frac{5}{6} = ?$ <input type="checkbox"/> $\frac{7}{24}$ <input type="checkbox"/> $\frac{7}{12}$ <input type="checkbox"/> $1\frac{1}{3}$ <input type="checkbox"/> $1\frac{7}{24}$
38.	Max had $2\frac{1}{3}$ kg of prawns when he got back from the shop. He ate $\frac{3}{8}$ of them straight away. How many kg of prawns did he have left? <div><input type="text"/> $\frac{\text{ }{\text{ }}}{\text{ }}$</div>
39.	Simplify $1\frac{3}{5} \div 1\frac{1}{3} =$ <div><input type="text"/> $\frac{\text{ }{\text{ }}}{\text{ }}$</div>
40.	If I start with a number between 1 and 2, which of these operations will always give an answer smaller than the original number. <input type="checkbox"/> Dividing the original number by a number less than 1. <input type="checkbox"/> Multiplying the original number by a number less than 1. <input type="checkbox"/> Multiplying the original number by a number greater than 1. <input type="checkbox"/> Squaring the original number.

High School

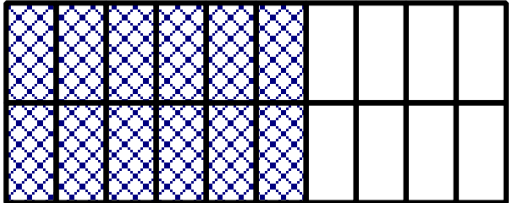
Mathematics Test 2015

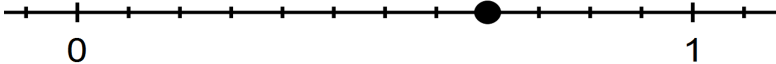
Year 7

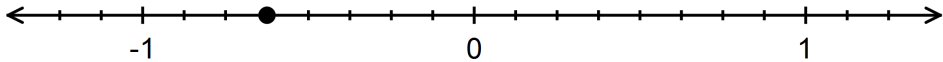
Fractions

Non Calculator
Section

ANSWERS

No.	WORKING	ANSWER
1.	Numerator is the top, so $\frac{8}{9}$ and $\frac{8}{15}$	4 th answer
2.	$\frac{5}{6}$ and $\frac{3}{4}$ are both greater than $\frac{1}{2}$.	2 nd answer
3.	7 parts out of 10, so $\frac{7}{10}$.	3 rd answer
4.	2 people out of 6, so $\frac{2}{6} = \frac{1}{3}$.	3 rd answer
5.	<p>Want $\frac{3}{5}$ of 20 parts so 3 out of every 5 and there are 4 lots of 5, so</p> $3 \times 4 = 12$ <p>Shade any 12 parts</p>	
6.	$\frac{8}{3} = \frac{6}{3} + \frac{2}{3} = 2\frac{2}{3}$	4 th answer
7.	$1\frac{5}{8} = \frac{1 \times 8 + 5}{8} = \frac{13}{8}$	$\frac{13}{8}$
8.	$\frac{15}{20} = \frac{3}{4}$	$\frac{3}{4}$
9.	$\frac{16}{24} = \frac{2}{3}$ (dividing by 8)	2 nd answer

10.	$\frac{15}{20} = \frac{3}{4} \neq \frac{3}{5}$	1 st answer
11.	$\frac{1}{5}, \frac{1}{4}, \frac{1}{3}, \frac{1}{2}$ Numerators are all 1, so largest denominator is the smallest fraction.	$\frac{1}{5}, \frac{1}{4}, \frac{1}{3}, \frac{1}{2}$
12.	$\frac{7}{20} + \frac{2}{20} = \frac{9}{20}$	$\frac{9}{20}$
13.	$\frac{1}{4} \times \frac{3}{8} = \frac{1 \times 3}{4 \times 8} = \frac{3}{32}$	$\frac{3}{32}$
14.	$\frac{1}{8} \div \frac{3}{5} = \frac{1}{8} \times \frac{5}{3} = \frac{5}{24}$	$\frac{5}{24}$
15.	$\frac{3}{8}$ of 48 litres = $\frac{3}{8} \times \frac{48}{1} = 3 \times 6 = 18$	18 litres
16.	a) $\frac{15}{18} = \frac{\boxed{5}}{6}$ b) $\frac{2}{5} = \frac{\boxed{12}}{30}$	a) 5 b) 12
17.	$\frac{3}{4} \times \frac{2}{2} = \frac{6}{8}, \quad \frac{12}{16} \div \frac{2}{2} = \frac{6}{8}, \quad \frac{5}{7} \neq \frac{6}{8},$ $\frac{9}{12} = \frac{3}{4} = \frac{6}{8}, \quad \frac{15}{24} \div \frac{3}{3} = \frac{5}{8} \neq \frac{6}{8}, \quad \frac{21}{28} \div \frac{7}{7} = \frac{3}{4} = \frac{6}{8}.$	3 rd answer
18.	a) $\frac{9}{12} \boxed{=} \frac{3}{4}$ b) $\frac{5}{8} \boxed{>} \frac{11}{24}$	a) = b) >
19.	15 kg of 200 kg = $\frac{15}{200} = \frac{3}{40}$	$\frac{3}{40}$
20.	 <p>There are 12 divisions between 0 and 1 so $\frac{1}{3} = 4$ divisions</p> <p>$\frac{2}{3} = 8$ divisions past 0</p>	

21.	 <p>Each division = $\frac{1}{8}$</p>	
22.	$\frac{2}{3} + \frac{1}{6} = \frac{4}{6} + \frac{1}{6} = \frac{5}{6}$	$\frac{5}{6}$
23.	$\frac{3}{5} + \frac{3}{10} = \frac{6}{10} + \frac{3}{10} = \frac{9}{10}$	$\frac{9}{10}$
24.	$\frac{1}{5} + \frac{3}{8} = \frac{8}{40} + \frac{15}{40} = \frac{23}{40}$	$\frac{23}{40}$
25.	$\frac{2}{3} \times \frac{1}{8} = \frac{2 \times 1}{3 \times 8} = \frac{2}{24} = \frac{1}{12}$	1 st answer
26.	$\frac{7}{12} - \frac{1}{3} = \frac{7}{12} - \frac{4}{12} = \frac{3}{12} = \frac{1}{4}$	$\frac{1}{4}$
27.	$\frac{5}{8} \div \frac{5}{6} = \frac{5}{8} \times \frac{6}{5} = \frac{30}{40} = \frac{3}{4}$	3 rd answer
28.	$\frac{19}{20} - \frac{4}{5} = \frac{19}{20} - \frac{16}{20} = \frac{3}{20}$	2 nd answer
29.	$\frac{7}{20} \times \frac{5}{8} = \frac{7 \times \cancel{5}_1}{\cancel{20}_4 \times 8} = \frac{7}{32}$	$\frac{7}{32}$
30.	$\left(\frac{5}{6}\right)^2 = \frac{5 \times 5}{6 \times 6} = \frac{25}{36}$	1 st answer
31.	$\frac{4}{5} \div \frac{3}{4} = \frac{4}{5} \times \frac{4}{3} = \frac{16}{15} = 1\frac{1}{15}$	4 th answer
32.	1 minute and 15 seconds = 60+15 = 75 seconds Fraction = $\frac{25}{75} = \frac{1}{3}$	$\frac{1}{3}$

33.	$\frac{5}{6} = \frac{10}{12}, \frac{7}{12}, \frac{3}{4} = \frac{9}{12}, \frac{2}{3} = \frac{8}{12}$ In order $\frac{7}{12}, \frac{8}{12}, \frac{9}{12}, \frac{10}{12}$ Simplified $\frac{7}{12}, \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$	$\frac{7}{12}, \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$
34.	a) Reciprocal of $\frac{7}{8} = \frac{8}{7} = 1\frac{1}{7}$ b) Reciprocal of $1\frac{4}{5} =$ Reciprocal of $\frac{9}{5} = \frac{5}{9}$	a) $1\frac{1}{7}$ b) $\frac{5}{9}$
35.	$1\frac{1}{3} + 2\frac{1}{12} = 1 + 2 + \frac{4}{12} + \frac{1}{12} = 3\frac{5}{12}$	$3\frac{5}{12}$
36.	$1\frac{3}{8} \times 1\frac{4}{5} = \frac{11}{8} \times \frac{9}{5} = \frac{99}{40} = 2\frac{19}{40}$	$2\frac{19}{40}$
37.	$3\frac{1}{8} - 1\frac{5}{6} = \frac{25}{8} - \frac{11}{6} = \frac{75}{24} - \frac{44}{24} = \frac{31}{24} = 1\frac{7}{24}$	4 th answer
38.	He ate $\frac{3}{8}$, so $\frac{5}{8}$ left. $\frac{5}{8}$ of $2\frac{1}{3} = \frac{5}{8} \times \frac{7}{3} = \frac{35}{24} = 1\frac{11}{24}$ kg left	$1\frac{11}{24}$
39.	$1\frac{3}{5} \div 1\frac{1}{3} = \frac{8}{5} \div \frac{4}{3} = \frac{8}{5} \times \frac{3}{4} = \frac{24}{20} = 1\frac{4}{20} = 1\frac{1}{5}$	$1\frac{1}{5}$

40.	<p>If the original lies between 1 and 2, e.g. $1\frac{1}{2}$.</p> <p>Dividing the original number by a number less than 1.</p> $1\frac{1}{2} \div \frac{5}{8} = \frac{3}{2} \times \frac{8}{5} = \frac{24}{10}$ <p>is larger than original.</p> <p>Multiplying the original number by a number less than 1.</p> $1\frac{1}{2} \times \frac{5}{8} = \frac{3}{2} \times \frac{5}{8} = \frac{15}{16}$ <p>is smaller than original.</p> <p>Multiplying the original number by a number greater than 1.</p> $1\frac{1}{2} \times 1\frac{1}{5} = \frac{3}{2} \times \frac{6}{5} = \frac{18}{10} = 1\frac{4}{5}$ <p>is larger than original.</p> <p>Squaring the original number.</p> $\left(1\frac{1}{2}\right)^2 = \left(\frac{3}{2}\right)^2 = \frac{9}{4} = 2\frac{1}{4}$ <p>is larger than original.</p>	<p>2nd answer</p>
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