High School Mathematics Test 2014

Year 7

Fractions

Non Calculator Section

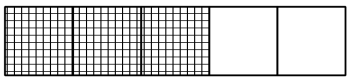
Skills and Knowledge Assessed:

- 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 deno minators (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 (AC MNA155)

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. The fraction of the diagram which is shaded is :



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

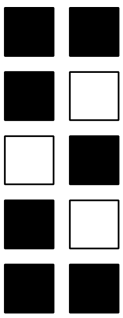
2. Which pair of fractions below has the same denominator but different numerators?

☐ $\frac{2}{9}$ and $\frac{2}{5}$ ☐ $\frac{2}{9}$ and $\frac{3}{5}$ ☐ $\frac{2}{9}$ and $\frac{5}{9}$ ☐ $\frac{2}{9}$ and $\frac{9}{2}$

3. In which pair below are both of the fractions greater than 1?

☐ $\frac{2}{5}$ and $\frac{1}{3}$ ☐ $1\frac{2}{3}$ and $\frac{1}{3}$ ☐ $1\frac{2}{5}$ and $\frac{4}{3}$ ☐ $\frac{3}{4}$ and $\frac{4}{5}$

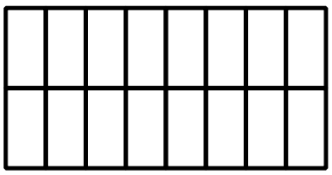
4. Some left over tiles are shown.
What fraction of the tiles are white?



☐ $\frac{3}{10}$ ☐ $\frac{3}{7}$

☐ $\frac{7}{10}$ ☐ $\frac{7}{3}$

5. Shade $\frac{3}{4}$ of the shape shown.



6. Write $\frac{9}{5}$ as a mixed number.

☐ $1\frac{1}{5}$ ☐ $1\frac{4}{9}$ ☐ $1\frac{4}{5}$ ☐ $2\frac{1}{5}$

7. Write $2\frac{2}{3}$ as an improper fraction.

$\frac{\square}{\square}$

8. Simplify the fraction : $\frac{9}{12}$.

$\frac{\square}{\square}$

9. The simplest equivalent fraction to $\frac{12}{30}$ is .

☐ $\frac{1}{3}$ ☐ $\frac{2}{5}$ ☐ $\frac{4}{10}$ ☐ $\frac{6}{15}$

10. Which fraction is not equivalent to $\frac{2}{3}$?

☐ $\frac{4}{6}$ ☐ $\frac{6}{10}$ ☐ $\frac{6}{9}$ ☐ $\frac{8}{12}$

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

$\frac{\square}{\square}$

12. $\frac{1}{3} \times \frac{2}{5} = ?$

$\frac{\square}{\square}$

13. Find $\frac{2}{3}$ of 36 kg.

$\square$ kg.

14. Complete the missing numbers to make pairs of equivalent fractions.

a) $\frac{12}{20} = \frac{\square}{5}$ b) $\frac{3}{8} = \frac{\square}{32}$

15. Sonia was asked to write down two pairs of equivalent fractions.

She wrote down: 1st pair : $\frac{12}{16}$ and $\frac{9}{12}$.

2nd pair : $\frac{10}{15}$ and $\frac{8}{12}$.

Which is true?

- ☐ Both pairs were correct.
- ☐ Only the 1st pair was correct.
- ☐ Only the 2nd pair was correct.
- ☐ Both pairs were incorrect.

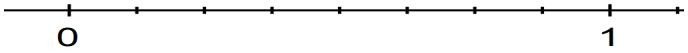
16. Write one of the symbols $<$, $>$ or $=$ in the boxes below to make true sentences.

a) $\frac{4}{5} \square \frac{7}{10}$ b) $\frac{17}{30} \square \frac{13}{20}$

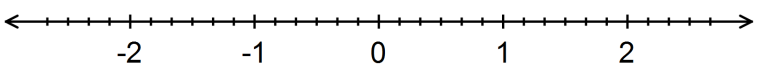
17. What fraction is 24 cm of 60 cm? (Answer in simplest form).

$\frac{\square}{\square}$

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



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



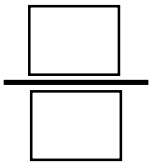
20. Which equation is correct?

☐ $\frac{1}{4}+\frac{1}{8}=\frac{3}{8}$ ☐ $\frac{1}{4}+\frac{1}{8}=\frac{2}{12}$

☐ $\frac{1}{4}+\frac{1}{8}=\frac{3}{12}$ ☐ $\frac{1}{4}+\frac{1}{8}=\frac{5}{8}$

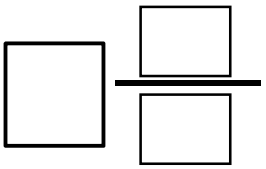
21. Find the answer to the addition, giving your answer in simplest form;

$$\frac{1}{5}+\frac{3}{10}=$$



22. Complete, giving your answer in simplest form;

$$\frac{3}{4}+\frac{2}{5}=$$

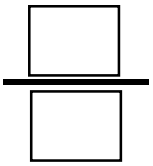


23. What is the answer to $\frac{2}{3}+\frac{1}{8}$ in simplest form;

☐ $\frac{3}{11}$ ☐ $\frac{1}{8}$ ☐ $\frac{19}{24}$ ☐ $\frac{11}{12}$

24. Complete, giving your answer in simplest form;

$$\frac{5}{8}-\frac{1}{4}= \quad =$$

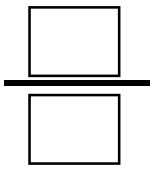


25. $\frac{7}{12}-\frac{3}{8}=?$

☐ $\frac{5}{24}$ ☐ $\frac{5}{12}$ ☐ $\frac{5}{6}$ ☐ 1

26. Simplify

$$\frac{3}{8}\times\frac{1}{6}=$$



27. Simplify $\frac{4}{5}\times\frac{5}{8}$.

☐ $\frac{1}{8}$ ☐ $\frac{1}{4}$ ☐ $\frac{9}{40}$ ☐ $\frac{1}{2}$

28. $\frac{1}{5} \div \frac{2}{3} = ?$

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

29. Complete, giving your answer in simplest form;

$\frac{5}{8} \div \frac{3}{4} =$ $=$ $\frac{\square}{\square}$

30. What fraction is 45 seconds of $2\frac{1}{2}$ minutes? (Answer in simplest form).

$\frac{\square}{\square}$

31. Rewrite the numbers $\frac{2}{5}$, $\frac{1}{4}$, $\frac{13}{20}$ and $\frac{3}{8}$ in ascending order.

$\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$

32. Write the reciprocal of these numbers.

a) $\frac{7}{10}$ ☐ b) $2\frac{3}{8}$ ☐

33. $1\frac{1}{5} + 2\frac{3}{10} = ?$

$\square \frac{\square}{\square}$

34. Simplify

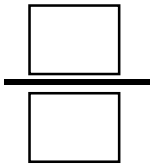
$1\frac{3}{8} \times \frac{4}{5} =$

$\square \frac{\square}{\square}$

35. $2\frac{1}{6} - 1\frac{3}{4} = ?$

☐ $\frac{5}{24}$ ☐ $\frac{5}{12}$ ☐ $\frac{5}{6}$ ☐ $1\frac{5}{12}$

36. Simplify

$1\frac{2}{3} \div \frac{5}{6} =$ 

High School Mathematics Test 2014

Year 7

Fractions

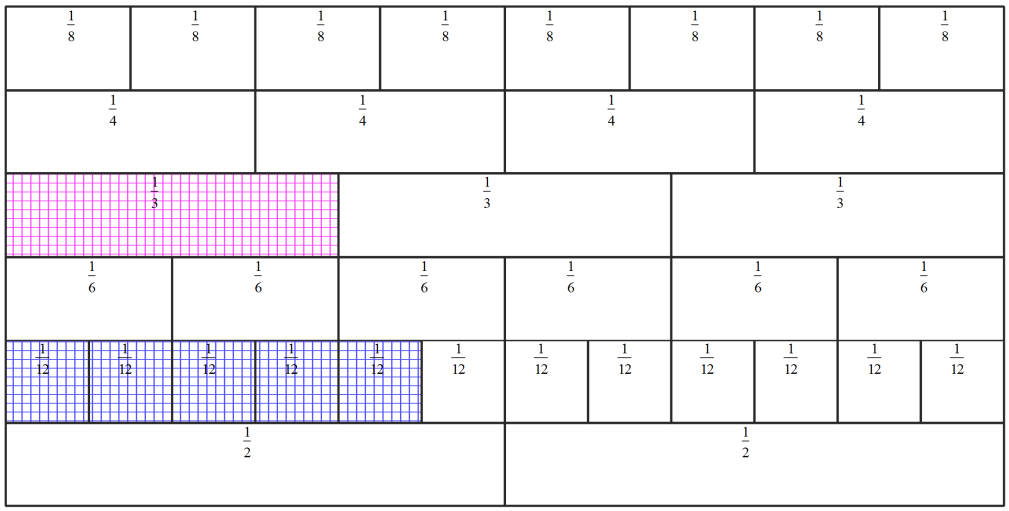
Non Calculator Longer Answer Section

Name_____

Write all working and answers in the spaces provided on this test paper.

Marks

1. The fraction wall below shows several equivalent fractions.



(a) The fractions $\frac{1}{3}$ and $\frac{5}{12}$ are shaded on the wall. **2**

Shade the fractions $\frac{3}{8}$ and $\frac{5}{6}$.

(b) Write two other fractions which are equivalent to $\frac{3}{12}$. **1**

.....

(c) What is the value of $\frac{1}{6} + \frac{1}{3}$? **1**

.....

(d) What is the value of $\frac{3}{4} - \frac{1}{3}$? **1**

.....

2. Lisa has 36 pieces of jewellery in her case.
One third of the pieces are necklaces, $\frac{1}{4}$ of them are bracelets, $\frac{1}{6}$ are earrings and the rest are rings.

a) How many necklaces does she have? **1**

.....

.....

b) How many pieces are bracelets? **1**

.....

.....

c) How many rings are there? **1**

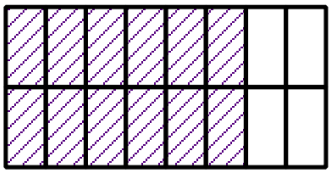
.....

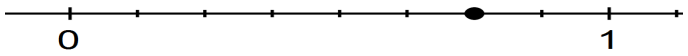
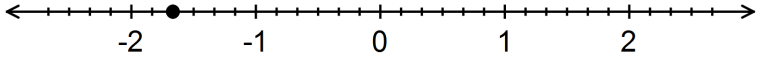
.....

High School
Mathematics Test 2014

Fractions
ANSWERS

Non Calculator Section (1 mark each)

Q no	Working and Answer
1.	3 out of 5 so $\frac{3}{5}$. (3rd Answer)
2.	$\frac{2}{9}$ and $\frac{5}{9}$ (3rd Answer)
3.	$1\frac{2}{5}$ and $\frac{4}{3}$ (3rd Answer)
4.	3 out of 10 so $\frac{3}{10}$ (1st Answer)
5.	Any 12 shaded, e.g: 
6.	$\frac{9}{5} = 1\frac{4}{5}$ (3rd Answer)
7.	$2\frac{2}{3} = \frac{6}{3} + \frac{2}{3} = \frac{8}{3}$
8.	$\frac{9}{12} = \frac{3}{4}$
9.	$\frac{12}{30} = \frac{2}{5}$ (2nd Answer)
10.	$\frac{6}{10} = \frac{3}{5} \neq \frac{2}{3}$ (2nd Answer)
11.	$\frac{5}{12} + \frac{2}{12} = \frac{7}{12}$
12.	$\frac{1}{3} \times \frac{2}{5} = \frac{2}{15}$

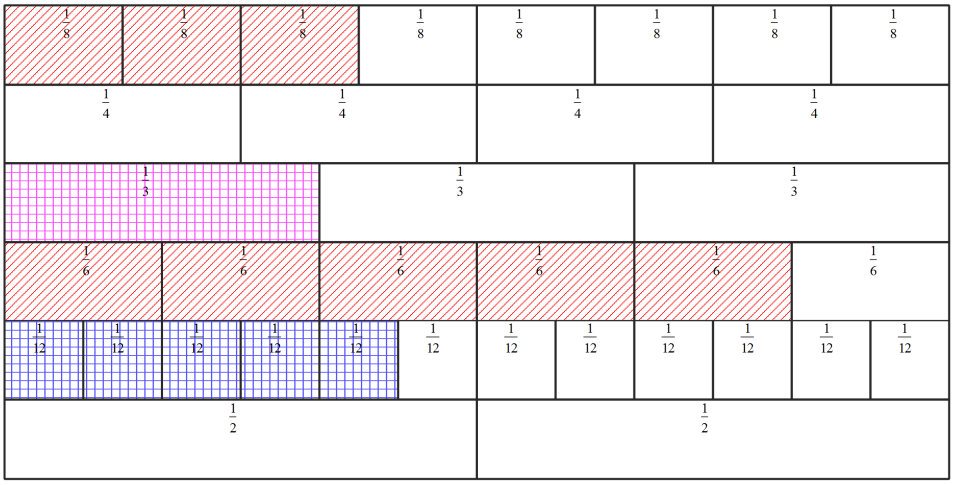
13.	$\frac{2}{3} \times \frac{36}{1} = 24 \text{ kg}$
14.	a) $\frac{12}{20} = \frac{\mathbf{3}}{5}$ b) $\frac{3}{8} = \frac{\mathbf{12}}{32}$
15.	1st pair : $\frac{12}{16} = \frac{3}{4} = \frac{9}{12}$. 2nd pair : $\frac{10}{15} = \frac{2}{3} = \frac{8}{12}$. Both are correct (1st Answer)
16.	a) $\frac{8}{10} > \frac{7}{10}$ $\frac{4}{5} > \frac{7}{10}$ b) $\frac{34}{60} < \frac{39}{60}$ $\frac{17}{30} < \frac{13}{20}$
17.	$\frac{24}{60} = \frac{2}{5}$
18.	
19.	
20.	$\frac{1}{4} + \frac{1}{8} = \frac{3}{8}$ (1st Answer)
21.	$\frac{1}{5} + \frac{3}{10} = \frac{2}{10} + \frac{3}{10} = \frac{5}{10} = \frac{1}{2}$
22.	$\frac{3}{4} + \frac{2}{5} = \frac{15}{20} + \frac{8}{20} = \frac{23}{20} = 1\frac{3}{20}$
23.	$\frac{2}{3} + \frac{1}{8} = \frac{16}{24} + \frac{3}{24} = \frac{19}{24}$ (3rd Answer)
24.	$\frac{5}{8} - \frac{1}{4} = \frac{5}{8} - \frac{2}{8} = \frac{3}{8}$
25.	$\frac{7}{12} - \frac{3}{8} = \frac{14}{24} - \frac{9}{24} = \frac{5}{24}$ (1st Answer)
26.	$\frac{3}{8} \times \frac{1}{6} = \frac{3}{48} = \frac{1}{16}$

27.	$\frac{4}{5} \times \frac{5}{8} = \frac{20}{40} = \frac{1}{2}$ (4th Answer)
28.	$\frac{1}{5} \div \frac{2}{3} = \frac{1}{5} \times \frac{3}{2} = \frac{3}{10}$ (1st Answer)
29.	$\frac{5}{8} \div \frac{3}{4} = \frac{5}{8} \times \frac{4}{3} = \frac{20}{24} = \frac{5}{6}$
30.	$2\frac{1}{2}$ minutes $= 2 \times 60 + 30 = 150$ seconds $\frac{45}{150} = \frac{3}{10}$
31.	$\frac{2}{5} = \frac{16}{40}$ $\frac{1}{4} = \frac{10}{40}$ $\frac{13}{20} = \frac{26}{40}$ $\frac{3}{8} = \frac{15}{40}$ In order $\frac{1}{4}$, $\frac{3}{8}$, $\frac{2}{5}$, $\frac{13}{20}$
32.	a) $\frac{7}{10} \Rightarrow \frac{10}{7} = 1\frac{3}{7}$ b) $2\frac{3}{8} = \frac{19}{8} \Rightarrow \frac{8}{19}$
33.	$1\frac{1}{5} + 2\frac{3}{10} = 3 + \frac{2}{10} + \frac{3}{10} = 3\frac{5}{10} = 3\frac{1}{2}$
34.	$1\frac{3}{8} \times \frac{4}{5} = \frac{11}{8} + \frac{4}{5} = \frac{44}{40} = 1\frac{4}{40} = 1\frac{1}{10}$
35.	$2\frac{1}{6} - 1\frac{3}{4} = \frac{13}{6} - \frac{7}{4} = \frac{26}{12} - \frac{21}{12} = \frac{5}{12}$ (2nd Answer)
36.	$1\frac{2}{3} \div \frac{5}{6} = \frac{5}{3} \div \frac{5}{6} = \frac{5}{3} \times \frac{6}{5} = \frac{30}{15} = 2$

High School Mathematics Test 2014

Longer Answer Section

Answers

Q no		
1.		1 for each
	b) $\frac{3}{12} = \frac{1}{4} = \frac{2}{8}$	1
	c) $\frac{1}{6} + \frac{1}{3} = \frac{1}{6} + \frac{2}{6} = \frac{3}{6} = \frac{1}{2}$	1
	d) $\frac{3}{4} - \frac{1}{3} = \frac{9}{12} - \frac{4}{12} = \frac{5}{12}$	1
2.	a) Number of necklaces $= \frac{1}{3} \times 36 = 12$	1
	b) Number of bracelets $= \frac{1}{4} \times 36 = 9$	1
	c) Fraction not rings $= \frac{1}{3} + \frac{1}{4} + \frac{1}{6} = \frac{4+3+2}{12} = \frac{9}{12} = \frac{3}{4}$ Fraction which are rings $= \frac{1}{4}$ Number of rings $= \frac{1}{4} \times 36 = 9$	1