

math

MAMMOTH



Math Mammoth End-of-the-Year Test — Grade 3 South African Version

This test is quite long, so I do not recommend having your child/student do it in one sitting. Break it into parts and administer them either on consecutive days, or perhaps on morning/evening/morning. This is to be used as a diagnostic test. You may even skip those areas that you already know for sure your student has mastered.

The test does not cover every single concept that is covered in the *Math Mammoth Grade 3 Complete Curriculum*, but all the major concepts and ideas are tested here. This test is evaluating the student's ability in the following content areas:

- multiplication tables and basic division facts
- mental addition and subtraction
- regrouping in addition and subtraction
- basic word problems
- multiplication and related concepts
- clock to the minute and elapsed time calculations
- basic money calculations (working out totals and change)
- place value and rounding with four-digit numbers
- quadrilaterals, perimeter, and area
- division and related concepts (remainder, word problems)
- measuring lines in centimetres
- basic usage of measuring units
- the concept of a fraction and mixed number, equivalent fractions, and comparing fractions

Note 1: problems #2 and #3 are done orally and timed. Let the student see the problems. Read each problem aloud, and wait a maximum of 5-6 seconds for an answer. Mark the problem as right or wrong according to the student's (oral) answer. Mark it wrong if there is no answer. Then you can move on to the next problem.

You do not have to mention to the student that the problems are timed or that he/she will have 5-6 seconds per answer, because the idea here is not to create extra pressure by the fact it is timed, but simply to check if the student has the facts memorized (quick recall). You can say for example (vary as needed):

"I will ask you some multiplication and division questions. Try to answer me as quickly as possible. In each question, I will only wait a little while for you to answer, and if you do not say anything, I will move on to the next problem. So just try your best to answer the questions as quickly as you can."

In order to continue with the Math Mammoth Grade 4 Complete Curriculum, I recommend that the student gain a score of 80% or higher on this test, and that the teacher or parent revise with him any content areas that are found weak. Students scoring between 70% and 80% may also continue with grade 4, depending on the types of errors (careless errors or not remembering something, versus the lack of understanding). The most important content areas to master are the multiplication tables and the word problems, because of the level of logical reasoning needed in them. Again, use your judgment.

Grading

My suggestion for grading is below. The total is 207 points. A score of 166 points is 80%.

Grading on question 1 (the multiplication tables grid): There are 169 empty squares to fill in, and the completed table is worth 17 points. Count how many of the answers the student gets right, divide that by 10, and round to the nearest whole point. For example: a student gets 24 correct. $24/10 = 2.4$, which rounded becomes 2 points. Or, a student gets 85 correct: $85/10 = 8.5$, which rounds to 9 points.

Question	Max. points	Student score
Multiplication Tables and Basic Division Facts		
1	17 points	
2	16 points	
3	16 points	
<i>subtotal</i>		/ 49
Addition and Subtraction, Including Word Problems		
4	6 points	
5	6 points	
6	4 points	
7	4 points	
8	4 points	
9	3 points	
10	3 points	
11	4 points	
<i>subtotal</i>		/ 34
Multiplication and Related Concepts		
12	1 point	
13	1 point	
14	3 points	
15	3 points	
16	1 point	
17	2 points	
18	1 point	
<i>subtotal</i>		/ 12
Time		
19	8 points	
20	3 points	
<i>subtotal</i>		/ 11

Question	Max. points	Student score
Graphs		
21a	1 point	
21b	1 point	
21c	1 point	
21d	2 points	
<i>subtotal</i>		/ 5
Money		
22a	1 point	
22b	2 points	
22c	2 points	
23	2 points	
24	3 points	
<i>subtotal</i>		/ 10
Place Value and Rounding		
25	2 points	
26	5 points	
27	4 points	
28	2 points	
29	8 points	
<i>subtotal</i>		/ 21
Geometry		
30	5 points	
31	2 points	
32	4 points	
33	2 points	
34	2 points	
35	3 points	
<i>subtotal</i>		/ 18

Question	Max. points	Student score
Measuring		
36	2 points	
37	2 points	
38	2 points	
39	6 points	
<i>subtotal</i>		/ 12
Division and Related Concepts		
40	2 points	
41	6 points	
42	3 points	
43	2 points	
44	2 points	
<i>subtotal</i>		/ 15
Fractions		
45	6 points	
46	3 points	
47	2 points	
48	3 points	
49	4 points	
50	2 points	
<i>subtotal</i>		/ 20
TOTAL		/ 207

End of the Year Test - Grade 3

Multiplication Tables and Basic Division Facts

1. Your first problem will be to fill in the complete multiplication table.
See how much of it you can fill in, in twelve minutes.

×	0	1	2	3	4	5	6	7	8	9	10	11	12
0													
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

In problems 2 and 3, your teacher will read you multiplication and division questions. Try to answer them as quickly as possible. In each question, he/she will only wait a little while for you to answer, and if you do not say anything, your teacher will move on to the next problem. So just try your best to answer the questions as quickly as you can.

2. Multiply.

a.	b.	c.	d.
$2 \times 7 =$ _____	$7 \times 4 =$ _____	$3 \times 3 =$ _____	$7 \times 8 =$ _____
$8 \times 3 =$ _____	$5 \times 8 =$ _____	$4 \times 4 =$ _____	$6 \times 5 =$ _____
$5 \times 5 =$ _____	$3 \times 9 =$ _____	$7 \times 7 =$ _____	$8 \times 6 =$ _____
$9 \times 4 =$ _____	$5 \times 7 =$ _____	$4 \times 8 =$ _____	$6 \times 9 =$ _____

3. Divide.

a.	b.	c.	d.
$21 \div 3 =$ _____	$32 \div 4 =$ _____	$45 \div 5 =$ _____	$50 \div 5 =$ _____
$35 \div 7 =$ _____	$40 \div 8 =$ _____	$28 \div 4 =$ _____	$72 \div 9 =$ _____
$48 \div 6 =$ _____	$66 \div 6 =$ _____	$36 \div 9 =$ _____	$18 \div 6 =$ _____
$49 \div 7 =$ _____	$56 \div 8 =$ _____	$63 \div 7 =$ _____	$27 \div 9 =$ _____

Addition and Subtraction, including Word Problems

4. Add mentally.

a. $240 + 70 =$ _____ $99 + 50 =$ _____	b. $540 + 80 =$ _____ $335 + 9 =$ _____	c. $59 + 89 =$ _____ $46 + 34 =$ _____
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5. Subtract mentally.

a. $100 - 67 =$ _____ $73 - 68 =$ _____	b. $651 - 8 =$ _____ $54 - 9 =$ _____	c. $52 - 37 =$ _____ $400 - 22 =$ _____
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6. Subtract and check your answers using the grid.

a. $\begin{array}{r} 962 \\ - 383 \\ \hline \end{array}$ <div style="display: inline-block; vertical-align: middle; margin-left: 20px;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> </table> </div>										b. $\begin{array}{r} 7002 \\ - 4526 \\ \hline \end{array}$ <div style="display: inline-block; vertical-align: middle; margin-left: 20px;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> </table> </div>												

7. Solve.

a. $82 + 5539 + 1254 + 278$ <div style="margin-top: 20px;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> </table> </div>																			b. $535 - (430 - 173)$ <div style="margin-top: 20px;"> <table border="1" style="border-collapse: collapse; text-align: center; margin-right: 20px;"> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> <tr><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td><td style="width: 30px; height: 30px;"></td></tr> </table> </div>																		

8. Solve what number goes in place of the triangle.

<p>a. $414 + \triangle = 708$</p> <p>\triangle is _____</p> <div style="text-align: center; margin-top: 20px;"><table border="1" style="border-collapse: collapse; width: 100px; height: 100px;"><tr><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td></tr><tr><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td></tr><tr><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td></tr></table></div>										<p>b. $\triangle - 339 = 485$</p> <p>\triangle is _____</p> <div style="text-align: center; margin-top: 20px;"><table border="1" style="border-collapse: collapse; width: 100px; height: 100px;"><tr><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td></tr><tr><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td></tr><tr><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td></tr></table></div>									

Solve.

<p>9. Jabhi bought a mobile phone for R185 and a phone case for R32. What was his change from R300?</p> <div style="text-align: center; margin-top: 20px;"><table border="1" style="border-collapse: collapse; width: 100px; height: 100px;"><tr><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td></tr><tr><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td></tr><tr><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td></tr></table></div>										<p>10. A family is driving 300 kilometres from their hometown to Grandmother's house. Ten kilometres before the half-way point they stopped to have lunch. How many kilometres do they still have to go?</p>
<p>11. A store received 100 boxes, which each had 8 light bulbs.</p> <p>a. How many light bulbs did the store receive?</p> <p>b. After selling 8 boxes, how many bulbs are left?</p>	<div style="text-align: center; margin-top: 20px;"><table border="1" style="border-collapse: collapse; width: 100px; height: 100px;"><tr><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td></tr><tr><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td></tr><tr><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td><td style="width: 33.33%; height: 33.33%;"></td></tr></table></div>									

Multiplication and Related Concepts

12. Draw a picture to illustrate the multiplication $3 \times 4 = 12$.

13. Solve: $5 \times 25 =$ _____

14. Solve.

a. $24 + 8 \times 3$	b. $2 + (5 + 4) \times 2$	c. $66 - 5 \times 5$
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15. Write a multiplication sentence (NOT just the answer) to solve how many legs these animals have in total.

a. seven horses _____

b. five ducks _____

c. eight horses and six ducks _____


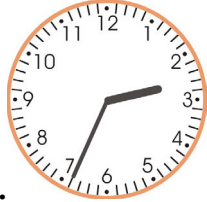


16. Each table in a restaurant seats four people. How many tables do you need to reserve for a group of 31 people?

17. A toy store had a bag of balloons for R8 and a toy car for R6. How much would it cost to buy three bags of balloons and three toy cars?

18. Ansie is bagging hair barrettes she made. She puts four barrettes in each bag. She has 28 barrettes to bag. How many bags will she need?

Time

19. Write the time the clock shows, and the time 10 minutes later.

	 <p>a.</p> <p>_____ : _____</p>	 <p>b.</p> <p>_____ : _____</p>	 <p>c.</p> <p>_____ : _____</p>	 <p>d.</p> <p>_____ : _____</p>
10 min. later	_____ : _____	_____ : _____	_____ : _____	_____ : _____

20. **a.** The TV show starts at 6:25 PM and ends at 7:00 PM.
How long is it?

b. Mr. Malaka's aeroplane landed at 11:30 AM. If the flight lasted for 6 hours, when did it take off?

c. The soccer match was scheduled for 21 May, but it was postponed (made later) by one week. What was the new date for the match?

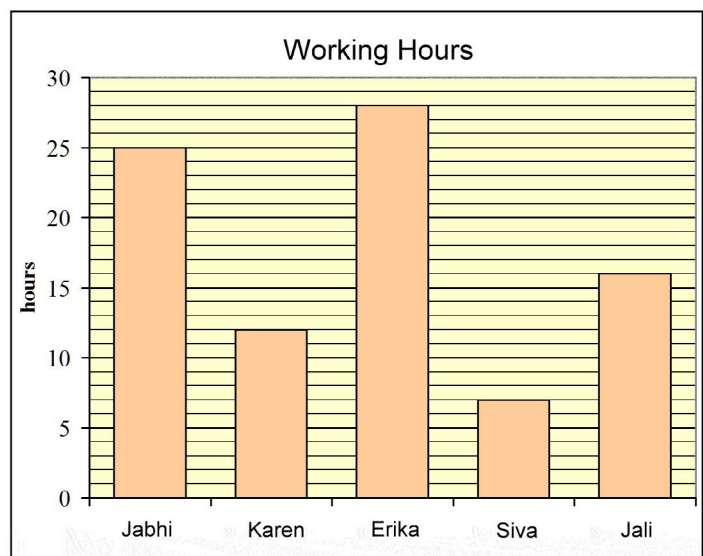
Graphs

21. The graph shows some people's working hours on Uncle Thando's apple farm.

a. How many hours did Erika work?

b. How many hours did Karen work?





c. How many more hours did Jabhi work than Jali?



d. How many hours did the three boys work in total?

Money

22. Find the total cost of buying the items listed. Line up the numbers carefully when you add.

 R16,60	 R18,95	 R2,25	 R216,50
a. a calculator and a bag	b. two pens and a book	c. three pens and a calculator	

23. Work out the change.

a. A book costs R17,10. You give R20. Change: R _____	b. A basket costs R14,45. You give R15. Change: R _____
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24. An eraser costs R2,35. If Muzi bought four of them and paid with R10, what was his change be?

Place Value and Rounding

25. Fill in the missing part.

a. $2\,000 + 60 + \underline{\hspace{2cm}} = 2\,760$	b. $700 + 20 + \underline{\hspace{2cm}} + 9 = 2\,729$
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26. Compare and write $<$, $>$ or $=$.

a. $6\,034 \square 3\,064$	b. $5\,156 \square 5\,516$	c. $9\,079 \square 9\,097$
d. $6\,000 + 3 + 40 \square 400 + 60 + 3\,000$	e. $900 + 7\,000 \square 90 + 7\,000 + 2$	

27. Add and subtract.

a. $5\,400 + 300 = \underline{\hspace{2cm}}$ $7\,800 + 800 = \underline{\hspace{2cm}}$	b. $2\,900 - 1\,700 = \underline{\hspace{2cm}}$ $8\,100 - 300 = \underline{\hspace{2cm}}$
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28. Round the numbers to the nearest TEN.

a. $743 \approx \underline{\hspace{2cm}}$	b. $987 \approx \underline{\hspace{2cm}}$	c. $251 \approx \underline{\hspace{2cm}}$	d. $665 \approx \underline{\hspace{2cm}}$
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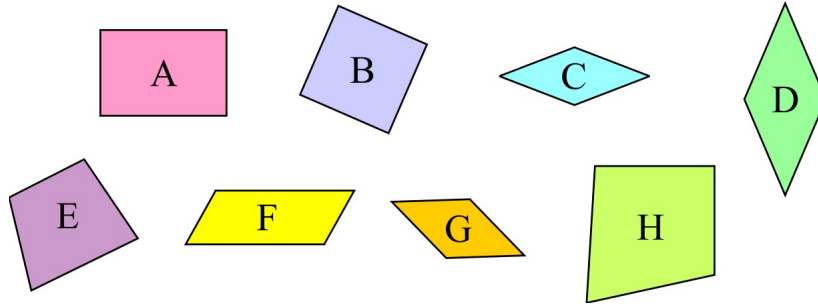
29. Estimate these calculations by rounding the numbers to the nearest hundred.

Also, calculate the exact answer.

<p>a. Round the numbers, then add:</p> $\begin{array}{r} 3\,782 \\ \downarrow \\ + \\ \hline \end{array} \quad \begin{array}{r} 2\,255 \\ \downarrow \\ + \\ \hline \end{array} = \underline{\hspace{2cm}}$	<p>Calculate exactly:</p> $\begin{array}{r} 3\,782 \\ + 2\,255 \\ \hline \end{array}$
<p>b. Round the numbers, then subtract:</p> $\begin{array}{r} 8\,149 \\ \downarrow \\ - \\ \hline \end{array} \quad \begin{array}{r} 888 \\ \downarrow \\ - \\ \hline \end{array} = \underline{\hspace{2cm}}$	<p>Calculate exactly:</p> $\begin{array}{r} 8\,149 \\ - 888 \\ \hline \end{array}$

Geometry

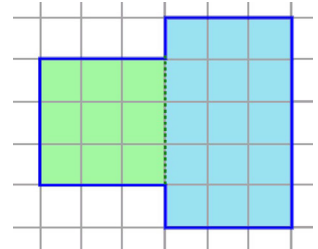
30. Name any special quadrilaterals.



31. Find the perimeter and area of this shape.

Perimeter: _____

Area : _____

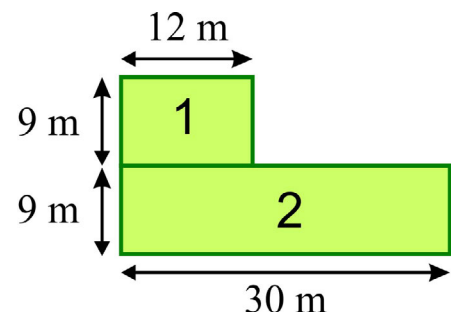


32. The picture shows a two-part lawn.

a. Find the areas of part 1 and part 2.

_____ and _____

b. Find the perimeter of the whole lawn.



33. The perimeter of a rectangle measures 66 cm. Find the other side length, if one side measures 10 cm.


34. Draw in the grid below:

a. a rectangle with an area of 15 square units

b. a rectangle with a perimeter of 10 units.



35. Write a number sentence for the total area, thinking of one rectangle or two.

$\underline{\quad} \times (\underline{\quad} + \underline{\quad}) =$	$\underline{\quad} \times \underline{\quad}$	+	$\underline{\quad} \times \underline{\quad}$	=	
area of the whole rectangle	area of the first part		area of the second part		

Measuring

36. Draw lines:

a. 16 cm long

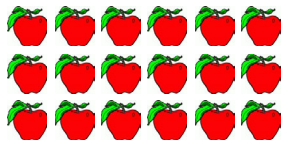
b. 75 mm long

37. Write in order from smallest to biggest unit: cm km m mm

38. Name a unit that you can use to measure a small amount of water in a drinking glass.
39. Fill in the blanks with suitable units of length. Sometimes several different units are possible.
- a. The mountain is 2 000 _____ high. b. The pencil is 14 _____ long.
- c. Jeremy bought 5 _____ of potatoes. d. The glass holds 300 _____ of liquid.
- e. The teacher weighs 68 _____ . f. The room was 20 _____ wide.

Division and Related Concepts

40. Write two multiplications and two divisions for the same picture.



$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} \div \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} \div \underline{\quad} = \underline{\quad}$$

41. Divide, but CROSS OUT all the problems that are impossible!

a. $17 \div 1 = \underline{\quad}$	b. $17 \div 17 = \underline{\quad}$	c. $1 \div 1 = \underline{\quad}$
$17 \div 0 = \underline{\quad}$	$0 \div 0 = \underline{\quad}$	$0 \div 1 = \underline{\quad}$

42. Divide. The small "r" refers to the remainder.

a. $17 \div 2 = \underline{\quad} \text{ r } \underline{\quad}$ b. $24 \div 5 = \underline{\quad} \text{ r } \underline{\quad}$ c. $47 \div 7 = \underline{\quad} \text{ r } \underline{\quad}$

43. A team leader divided a group of 24 children into teams.
Can he divide the children equally into teams of 5?



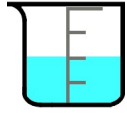
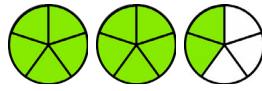
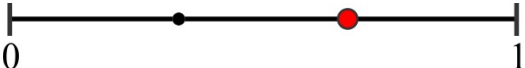
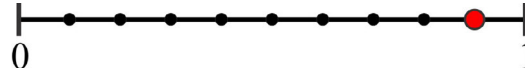
Teams of 6?

Teams of 7?

44. Anusha, Siva, and Thabo decided to buy a gift that cost R56 and flowers that cost R34 for Mum. The children shared the total cost equally. How much did each child pay?

Fractions

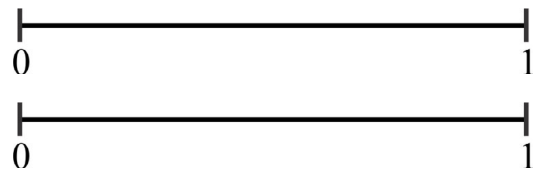
45. Write the fraction or mixed number.

 <p>a.</p>	 <p>b.</p>	 <p>c.</p>	 <p>d.</p>
<p>e.</p> 	<p>f.</p> 		







46. Write the whole numbers as fractions.

<p>a.</p>  <p>1 = </p>	<p>b.</p>  <p>2 = </p>	<p>c.</p>  <p>4 = </p>
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47. Mark the equivalent fractions $\frac{3}{6}$ and $\frac{1}{2}$ on the number lines.



48. Shade parts for the first fraction. Shade the same *amount* in the second picture, forming an equivalent fraction. Write the second fraction.

<p>a.</p>  <p>$\frac{3}{4} =$</p>  <p>$\frac{3}{12} =$</p>	<p>b.</p>  <p>$\frac{10}{12} =$</p> 	<p>c.</p>  <p>$\frac{2}{3} =$</p> 
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49. Compare the fractions.

a. $\frac{2}{7} \square \frac{2}{3}$

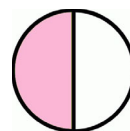
b. $\frac{5}{11} \square \frac{7}{11}$

c. $\frac{1}{2} \square \frac{9}{10}$

d. $\frac{1}{7} \square \frac{1}{8}$

50. Moipone ate $\frac{1}{2}$ of a strawberry pie, and Dithole ate $\frac{7}{12}$ of a blueberry pie. Look at the pictures. Who ate more pie?

Moipone's pie:



Dithole's pie:

