BENENDEN

Lower School Entrance 2017

MATHEMATICS

11+

1 Hour

Name: _____

Current school: _____

Date: _____

Equipment required: pen, pencil, ruler, protractor, compasses, eraser.

Instructions to Candidates:

- Attempt all questions. Do not worry if you don't manage to do them all
- Show ALL working
- Calculators are NOT permitted
- Check your answers for accuracy
- Total points for test 100

1 Look at the information about recycling in one town.

Recycling place	Glass	Cans	Plastic	Paper	Clothes	Shoes
Supermarket A	✓	✓		✓	✓	✓
Supermarket B	✓					
Supermarket C	✓	✓	✓			✓
Car park D	✓			✓	✓	
Car park E	✓	✓				
Road F	✓	✓		✓		

(a) How many places recycle cans? ..... (1)

(b) Which place recycles plastic? ..... (1)

(c) Jemima wants to go to a place that recycles clothes and shoes.
Which place should she go to? ..... (1)

2 Here are three numbers

6	9	32

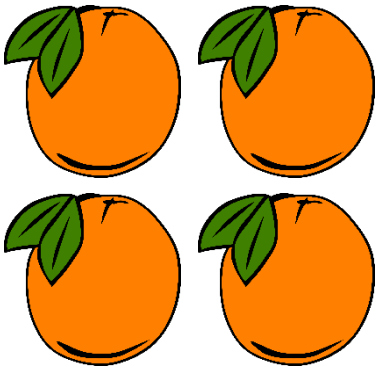
(a) What is the difference between the largest and the smallest number?

..... (1)

(b) Write a calculation using all three numbers that gives an answer of 138.

..... (2)

3 Sarah buys 4 oranges



(a) She pays with a two pound coin.

She gets £1.20 change.

How much does one orange cost?

…….. (2)

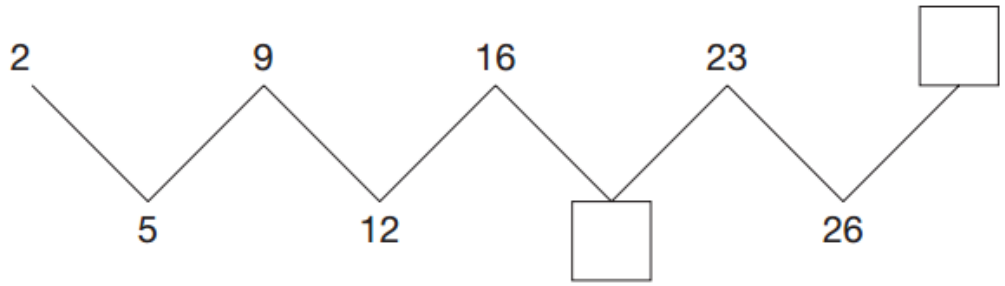
(b) Kiwi fruits cost 15p each.

Wendy has £1, how many Kiwi fruits can she buy?



…….. (2)

4 Look at this number sequence. Fill in the missing numbers



(2)

5 Lara wants to decorate some cakes.



Each cake will have 3 cherries,

Lara has 48 cherries, how many cakes can she decorate?

…….. (2)

6 Calculate the following:

(a) 364 + 469 =

…….. (1)

(b) 158 – 49 =

…….. (1)

(c) 74 x 24 =

…….. (1)

(d) 348 ÷ 3 =

…….. (1)

(e) 6 +7 x 4 =

…….. (1)

(f) 9 - 4 x 2 + 3 =

…….. (1)

7 Look at these statements about rectangles. For each statement tick (√) true or false

		TRUE	FALSE
(a)	All rectangles have four sides	☐	☐
(b)	All rectangles have four equal sides	☐	☐
(c)	Some rectangles have no right angles	☐	☐
(d)	All rectangles have at least one line of symmetry	☐	☐

(4)

8 (a) 45 + 54 is bigger than 43 + 51. How much bigger?

…….. (1)

(b) 7 x 9 is bigger than 6 x 9. How much bigger?

…….. (1)

9 Write the missing numbers

…….. = $\frac{1}{2}$ of 16

double ……. = $\frac{1}{2}$ of 16 (2)

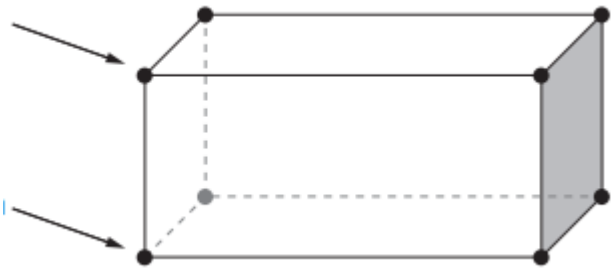
10 Write a number that is greater than 10 and a multiple of 4

……..(1)

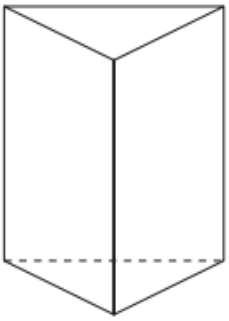
11 A cuboid has 8 vertices

4 vertices on the top

4 vertices on the bottom



(a) How many vertices does this 3-D shape have?



…….. (2)

(b) A different 3-D shape has 8 vertices. It has 6 faces. Each face is the same. Put a ring around the correct name for this shape.

SQUARE **PYRAMID** **CYLINDER**

CUBE **RECTANGLE** (1)

12 Which number is closest to **100**?

Put a ring around it

73 **128**

Explain how you know

…….(2)

13 (a) Which number is closest to **10** ?

Put a ring around it

-5 **16** **-9** **0** (1)

(b) Which number is closest to **1** ?

Put a ring around it

1.4 **1.34** **0** **1.65** (1)

14 This table show the times that the street lights come on one night and go off the next morning

City	Time the lights come **on (pm)**	Time the lights go **off (am)**
Belfast	6:45	6:13
Glasgow	6:40	6:05
London	6:21	5:51
Manchester	6:30	5:59
Newcastle	6:28	5:55

Complete the sentence below

(a) The lights in Manchester come on 15 minutes before those in

.....(1)

(b) In Glasgow the lights go off later than they do in Newcastle.

How much later?

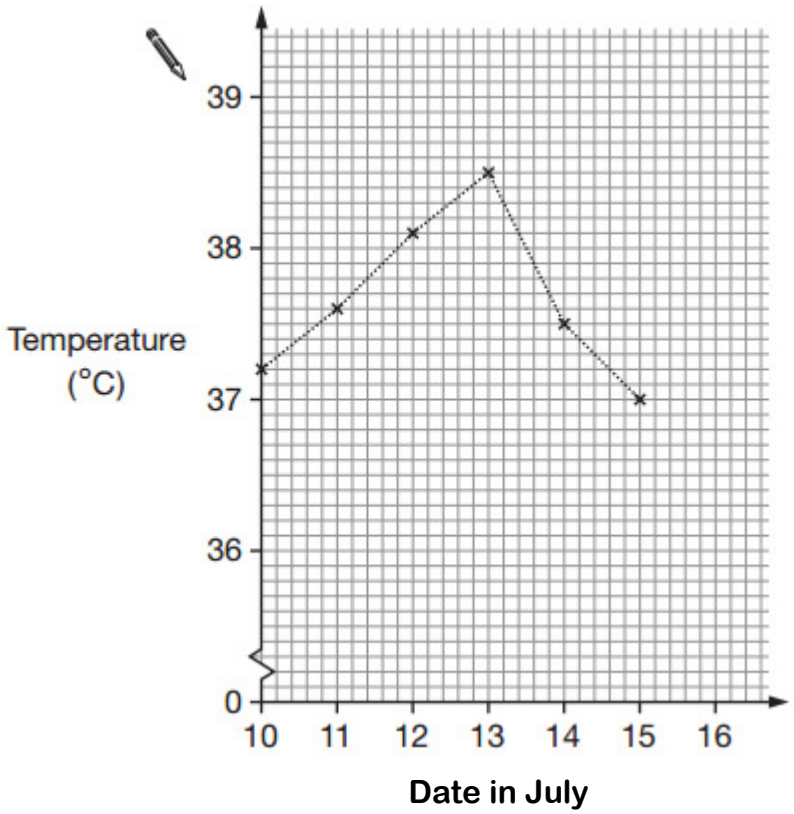
.....(1)

(c) In Ashford the lights come on at 6.20 and go off 11.5 hours Later, Complete the table below

City	Time the lights come **on (pm)**	Time the lights go **off (am)**
Ashford	6:20	_____ : _____

(2)

15 In July Charlotte was ill. Here is her temperature chart.



(a) What was Charlotte's highest temperature.

.....(1)

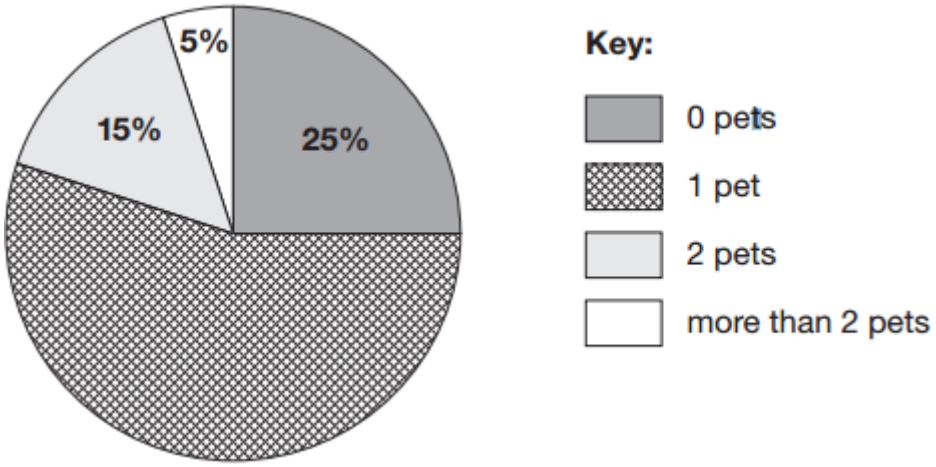
(b) On the 16th July, Charlotte's temperature was 36.7°C.

Mark this point on the graph (1)

16 Write down a number that is a **square number** and is a **multiple of seven**

.....(1)

17 Melissa asked the pupils in her class how many pets they had. She recorded her results in a pie chart



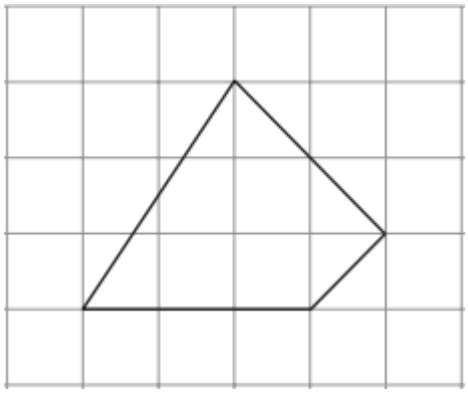
(a) What percentage of pupils had only one pet

.....(2)

(b) There are twenty pupils in the class, how many pupils had no pets?

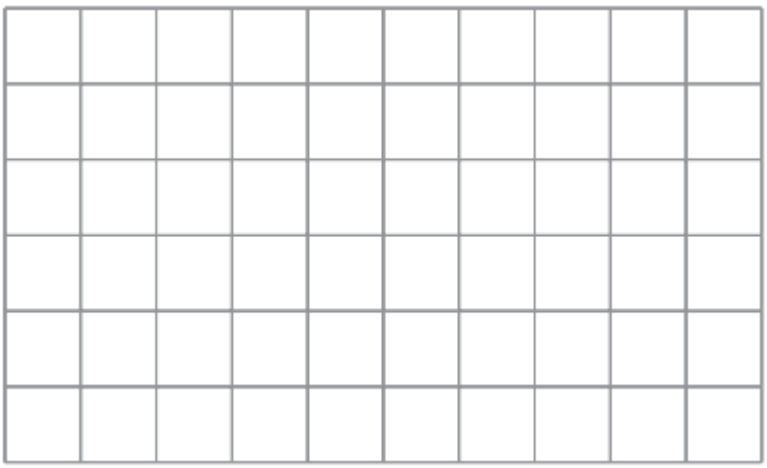
.....(2)

18 The shape on the square grid below has **exactly one right angle.** Mark the right angle on the shape.



(1)

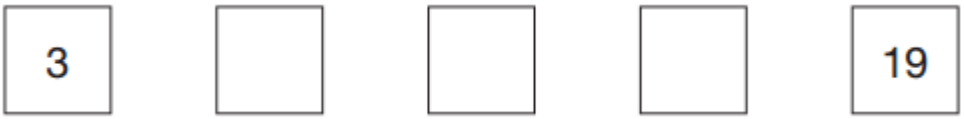
19 Draw a shape on the square grid below that has **exactly two right angles**



(2)

20 The rule for this sequence is add the same number each time.

Use this rule to write the missing numbers in the sequence

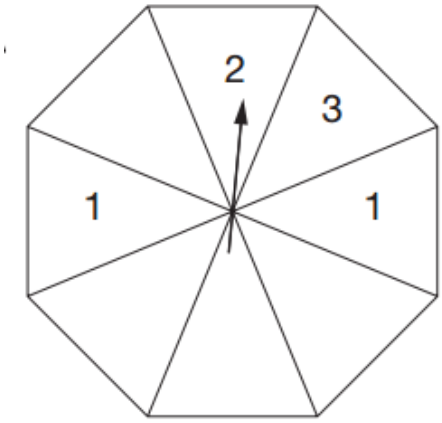


(2)

21 The diagram shows a fair spinner divided into eight equal sections.

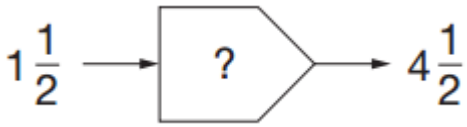
I am going to spin the spinner.

Write the numbers on the spinner using only 1,2 or 3 so that there is a 50% chance that I will spin an odd number.



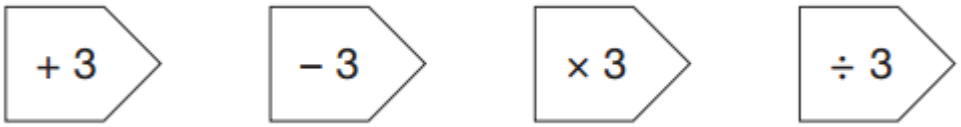
(4)

22 A rule changes $1\frac{1}{2}$ to $4\frac{1}{2}$



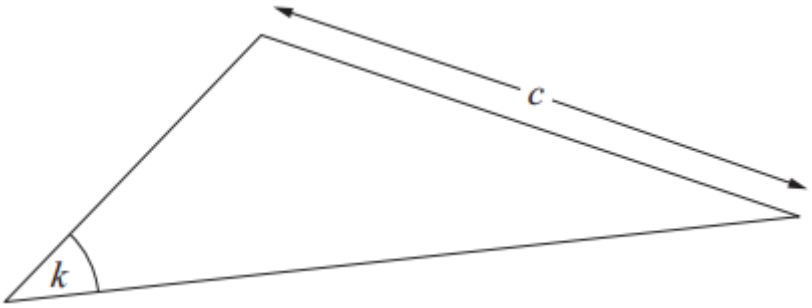
What could the rule be?

Tick the two correct answers below (√)



(2)

23 Look at the triangle



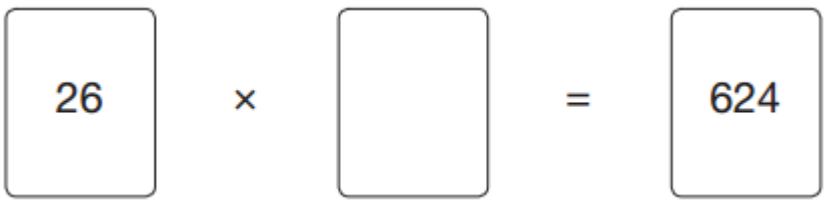
(a) Measure accurately the length *c*

.....(1)

(b) Measure accurately angle *k*

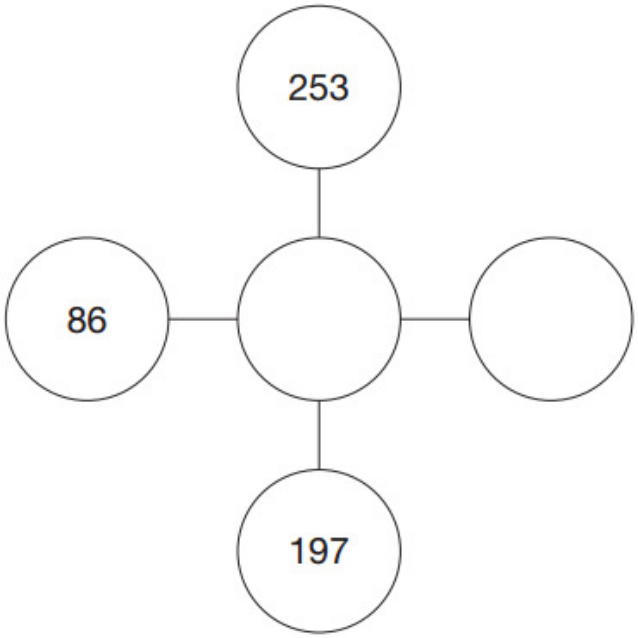
.....(2)

24 Write the missing number



(2)

25 Write numbers in the circles to make the three numbers along each line add up to **678**

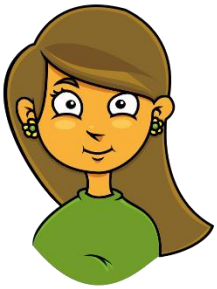


(2)

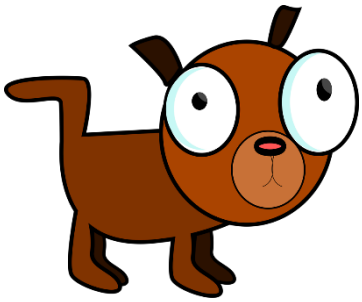
26 Katherine weighs herself

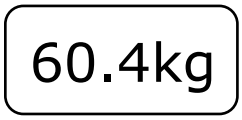


Then Katherine weighs herself together with her dog.



and





How much does the dog weigh?

.....(2)

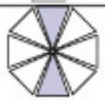
27 Each shape in this grid is hiding a particular number so that the three shapes in any row or column adds up to the value written at the end of that row or column.

☆	♡	♡	16
☆	☆	☆	12
☺	☆	☺	18
15	14	?	+

Work out the number that should replace the question mark.

……(2)

28 Give a fraction and a decimal for each area that is shaded in each shape.

	Shape	Fraction	Decimal
1.			
2.			
3.			
4.			
5.			
6.			

(6)

29 Find the mean, median, mode and range for each set of numbers.

2	1	1	5	6

median - _____ mode - _____

range - _____ mean - _____

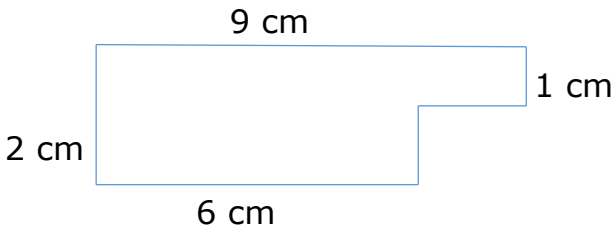
7	7	0	14	0	7	14

median - _____ mode - _____

range - _____ mean - _____

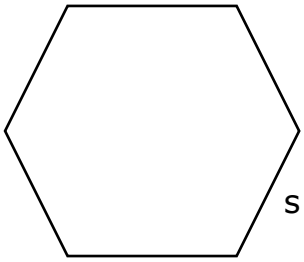
(6)

30 For the shape below calculate the perimeter and area



Perimeter…….. Area…….. (5)

31 The diagram below shows a regular hexagon of side length s



(a) Write a formula to calculate the perimeter P of the shape

……(1)

(b) Calculate the perimeter of a regular hexagon of side length

(i) 3 cm

……(1)

(ii) 5 cm

……(1)

(iii) 2.5 cm

……(1)

(c) Calculate the side length of a regular hexagon with perimeter

(i) 12 cm

……(1)

(ii) 9 cm

……(2)

32 Calculate how long:

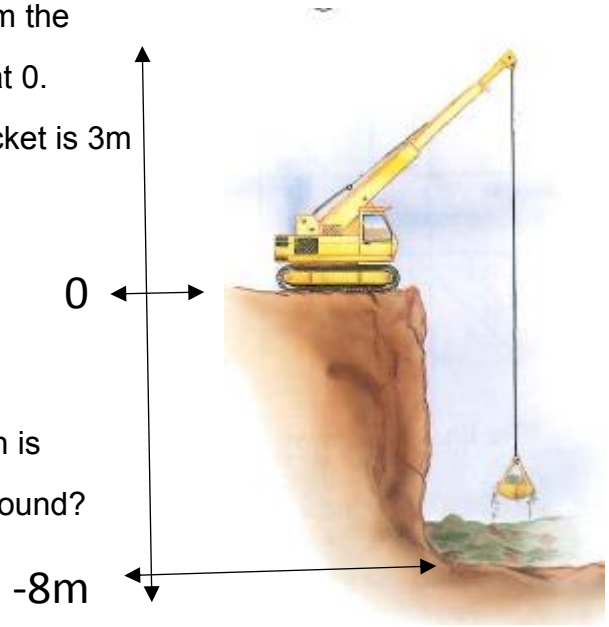
(a) it will take Emma to walk 1km if she walks at 5km/hr?

……(1)

(b) Jack will need to wait for the next bus if they run every hour on the half hour and he arrives 6 minutes late for the 9:30 bus?

……(1)

33 A crane is lifting some gravel from the bottom of a pit. Ground level is at 0. The pit bottom is at -8m. The bucket is 3m Above the bottom.



(i) At what level is the bucket?

……(1)

(ii) If the chain is 11m long, how high is the top of the crane above the ground?

…… (2)

(iii) The driver now wants the bucket to be half way between the top of the crane and where it is currently. How much chain must he wind in to achieve this?

……(2)

END OF EXAM

TOTAL: 100 MARKS

Make sure that you have completed as many questions as you can and have checked your answers before attempting this page!!!

TRUE OR FALSE

Here are sixty number sentences. Check each one carefully to see whether it is true or false.

1 $(3 + 4) + 5 = 3 + (4 + 5)$
2 $(3 \times 4) + 5 = 3 \times (4 + 5)$
3 $(2 \times 3) \times 4 = 2 \times (3 \times 4)$
4 $(5 - 3) + 2 = 5 - (3 + 2)$
5 $(8 - 3) \times 2 = 8 - (3 \times 2)$
6 $(4 + 8) \times 2 = 4 + (8 \times 2)$
7 $3 \times 7 = 7 \times 3$
8 $4 \div 2 = 2 \div 4$
9 $(5 - 3) - 2 = 5 - (3 - 2)$
10 $(24 \div 6) - 4 = 24 \div (6 - 4)$
11 $(3 \times 10) \div 2 = 3 \times (10 \div 2)$
12 $6 \div 3 = 6 \times \frac{1}{3}$
13 $\frac{1}{2}$ of $14 = 14 \div 2$
14 $\frac{1}{2}$ of $20 = 20 \times \frac{1}{2}$
15 $\frac{1}{2}$ of $4 + \frac{1}{2}$ of $6 = \frac{1}{2}$ of $(4 + 6)$
16 $\frac{1}{2}$ of $12 + \frac{1}{2}$ of $4 = \frac{1}{2}$ of 16
17 $\frac{1}{4}$ of $12 + \frac{1}{4}$ of $12 = \frac{1}{2}$ of 12
18 $\frac{1}{4}$ of $16 + \frac{1}{4}$ of $16 = (\frac{1}{4} + \frac{1}{4})$ of 16
19 $2^2 = 2 \times 2$
20 $3^2 + 4^2 = 5^2$
21 $2^2 + 3^2 = (2 + 3)^2$
22 $4^3 = 4 \times 4 \times 4$
23 $4^3 - 4^2 = 4$
24 $4^3 \div 4^2 = 4$
25 $9^2 - 2^2 = (9 - 2) \times (9 + 2)$
26 $10^2 - 5^2 = (10 - 5) \times (10 + 5)$
27 $9^2 - 3^2 = 6 \times 12$
28 $8^2 - 2^2 = 6 \times 10$
29 $7^2 - 3^2 = 4^2$
30 $100^2 - 1^2 = 101 \times 99$
31 $4 \times 9 - 4 \times 4 = 4 \times (9 - 4)$
32 $(12 - 5) \times 2 = 12 \times 2 - 5 \times 2$
33 $8 \times 3 - 5 \times 3 = (8 - 5) \times 3$
34 $3 \times 4 + 2 \times 4 = (3 + 2) \times 4$
35 $99 \times 7 + 99 \times 3 = 99 \times (7 + 3)$
36 $(30 \div 5) + (20 \div 5) = 50 \div 5$
37 $(30 \div 5) - (20 \div 5) = 10 \div 5$
38 $(12 \div 4) + (8 \div 4) = (12 + 8) \div 4$
39 $(20 \div 2) + (12 \div 2) = (20 + 12) \div 2$
40 $(3 + 4)^2 = 3^2 + 4^2 + 2 \times 3 \times 4$
41 $(5 + 2)^2 = 5^2 + 2^2$
42 $(5 + 2)^2 = 5^2 + 2^2 + 2 \times 5 \times 2$
43 $\frac{1}{3} < \frac{1}{4}$
44 $(\frac{1}{2})^2 < \frac{1}{4}$
45 $(\frac{1}{2})^2 < \frac{1}{2}$
46 $-5 > -4$
47 $-9 < -8$
48 $-9 > 0$
49 $-1 < 0$
50 $-1 + 1 = 0$
51 $-4 + 4 = 0$
52 $-3 + 9 = 6$
53 $0.4 < 4.0$
54 $(0.2)^2 = 0.4$
55 $0.4 \times 0.3 = 1.2$
56 $(0.5)^2 = 0.25$
57 $\triangle^2 = \triangle \times \triangle$
58 $(\triangle + \bigcirc) + \square = \triangle + (\bigcirc + \square)$
59 $\triangle^2 + \bigcirc^2 = (\triangle + \bigcirc)^2$
60 $\triangle - \bigcirc - \square = \triangle - (\bigcirc + \square)$