

St. Olave's Mathematics Entrance Test

Syllabus and Sample Questions

The Mathematics Test Paper will consist of around 30 questions of generally increasing difficulty. The paper will last 1 hour. The basis of the syllabus will be the concepts within the National Curriculum up to and including Level 4 standard. However, the problems set will often involve manipulation and application of these concepts in what may be unfamiliar situations. Such questions seek to test candidates' problem-solving abilities.

Entrance Test Topic Details

National Curriculum Section	Topics
Number	<ul style="list-style-type: none">* Addition and subtraction of whole numbers and decimals.* Multiplication and division of whole numbers and decimal by whole numbers less than 10 and powers of 10.* Simple calculations involving money, time, metric length and mass.* Simple fractions and percentage calculations.
Algebra	<ul style="list-style-type: none">* Types of number : primes, factors, multiples, squares.* Numerical patterns and sequences.* Simple algebra including formulae in words and finding unknown values by logical deduction.* Positive co-ordinates, i.e. those in the first quadrant.
Shape, Space And Measure	<ul style="list-style-type: none">* Use of simple 2-D nets to make 3-D objects, e.g. cube.* Congruence, line and rotational symmetry.* Reading scales and selection of appropriate units.* Perimeter and area of rectangles and squares.* Simple volumes by counting cubes.
Handling Data	<ul style="list-style-type: none">* Construct and use simple frequency tables for discrete data.* Represent and understand data represented using frequency diagrams and line graphs.* Mode and median of discrete data.* Simple concepts of probability.

Sample Question Paper

Within this booklet is about two-thirds (i.e. 40-45 minutes) of a photo-reduced past paper. Answers are provided on a separate insert. The following instructions are the same as those for the actual test paper.

- Write in pencil.
- No calculators are allowed.
- Work through the paper carefully without rushing.
- Show your workings in the space provided with each question.
- If you cannot do a question go on to the next one.

1. $47 + 2509 + 716 =$

Answer: _____

2.
$$\begin{array}{r} 1035 \\ - 496 \\ \hline \end{array}$$

Answer: _____

3. Write, in figures, ten thousand and twenty-eight.

Answer: _____

4.
$$\begin{array}{r} 392 \\ \times 6 \\ \hline \end{array}$$

Answer: _____

5. $4221 \div 7 =$

Answer: _____

6. Which of these numbers is the smallest?

$\frac{1}{4}$ 0.205 0.025 $\frac{2}{5}$ 0.04

Answer: _____

7. Find three quarters of 14.

Answer: _____

8. Find the sum of 5.07 and 0.036.

Answer: _____

9. A programme on TV started at 11.55 am and lasted for $1\frac{1}{4}$ hours. At what time did the programme end?

Answer: _____

10. Samir has a quarter of a cake to share with two of his friends. What fraction of the whole cake does each of the three boys get?

Answer: _____

11. Two children are aged 9 years 3 months and 5 years 10 months. What is the difference between their ages?

Answer: _____ years _____ months

12. Fill in the cost of the things on this shopping list.

2 tins of baked beans at 47p each _____

18 bread rolls at 56p per pack of 6 _____

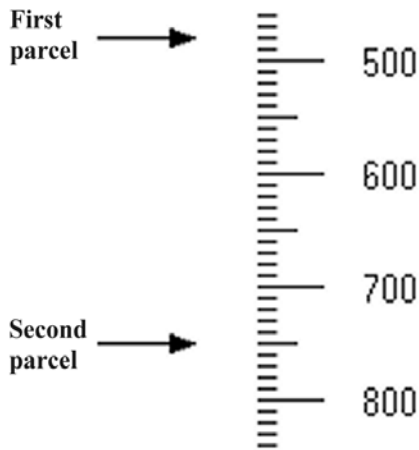
1.5 kg of potatoes at 72p per kg _____

TOTAL COST _____

If you paid for the shopping with a £10 note, how much change would you be given?

Answer: £ _____

13.



Two parcels are weighed one at a time. The arrows show their weights in grams.

(a) Write down the weights of the parcels.

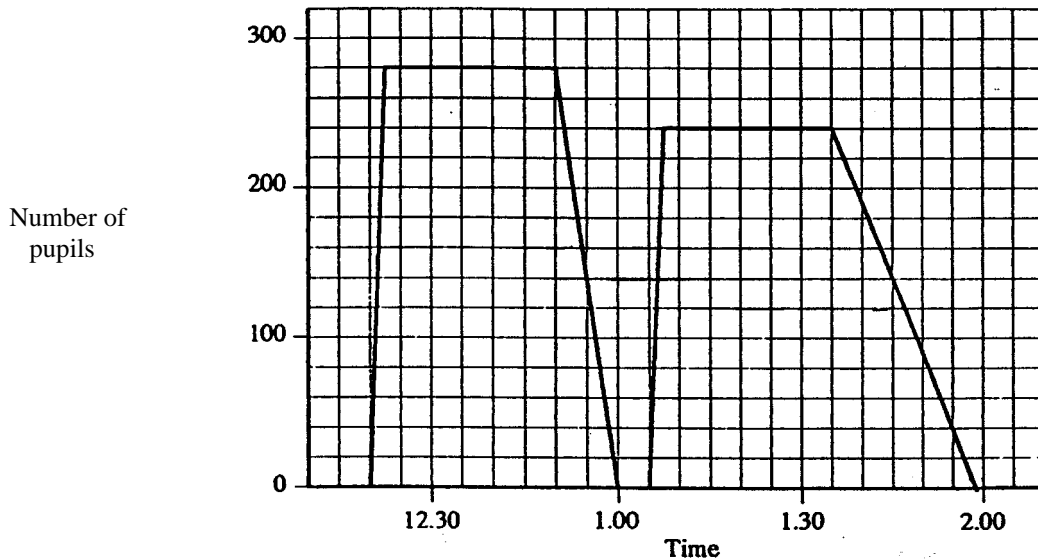
Answers: _____ g

_____ g

(b) What is the total weight of the two parcels in *kilograms*?

Answer: _____ kg

14. The graph shows the number of pupils in the school dining room during one lunch time.



(a) When did the lunch break start?

Answer: _____

(b) What is the largest number of pupils in the dining room?

Answer: _____

(c) How many pupils are there in the dining room at 1.45 p.m.?

Answer: _____

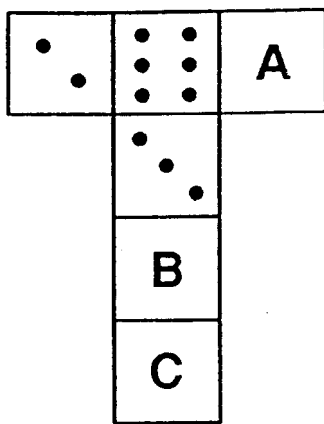
(d) There are 40 pupils still in the dining room when afternoon lessons begin. At what time do afternoon lessons begin?

Answer: _____

-
15. The 10 street lamps along one side of a straight piece of road are 80 metres apart. What is the distance between the first lamp and the last one?

Answer: _____ m

16. Peter is making dice. The diagram below shows the net of one of them. When the edges of the net are stuck together, the number of dots on opposite faces adds up to seven.



Write down the number of dots there should be on the faces marked A, B and C.

Answer A: _____

Answer B: _____

Answer C: _____

17. A new office block is going to be 20 storeys high and all the storeys will be of the same height. So far 6 storeys have been built and they reach a height of 27 metres.

(a) What fraction of the block has been built?

Answer: _____

(b) What will be the block's total height?

Answer: _____ m

18. The perimeter of a rectangle is 22 centimetres and its area is 24 square centimeters. What are the lengths of its sides?

Answers: _____ cm _____ cm

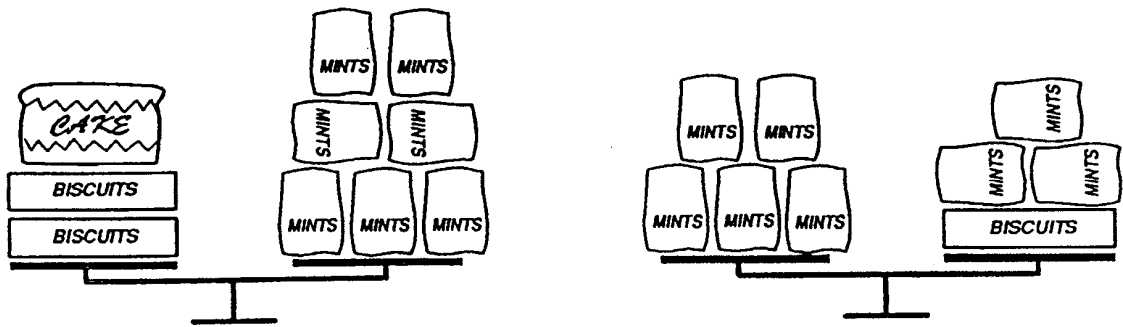
19. A shopkeeper wishes to write the words

WINTER SALE

on the inside of his shop window so that people outside the shop can read it.

What should he write? Put your answer in the space below.

20. If each bag of mints weighs 250 g, how heavy is the cake?

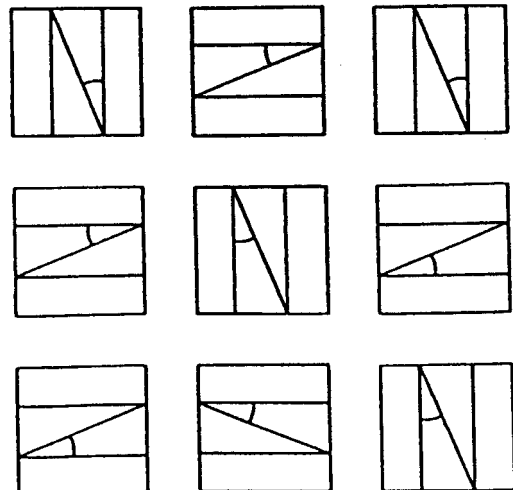


Answer: _____

- 21.

One of these squares is different from the others.

Put a ring round the one that is different.



22. Ben plants a seed and an unusual plant starts to grow. Every morning Ben finds that the plant is one and a half times as tall as it was the morning before. On Tuesday morning the plant is 12 cm tall.

(a) How tall will it be on Wednesday morning?

Answer: _____ cm

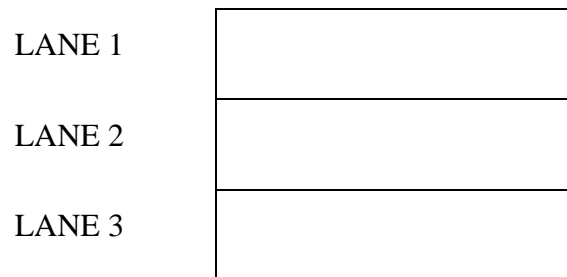
(b) How tall was the plant on Monday morning?

Answer: _____ cm

(c) How tall will the plant be on Friday morning?

Answer: _____ cm

23. On the deck of a small car ferry to a Scottish Island there are three lanes marked on the deck, each 20 metres long, as shown in the diagram below.



Waiting to be loaded are the following vehicles:

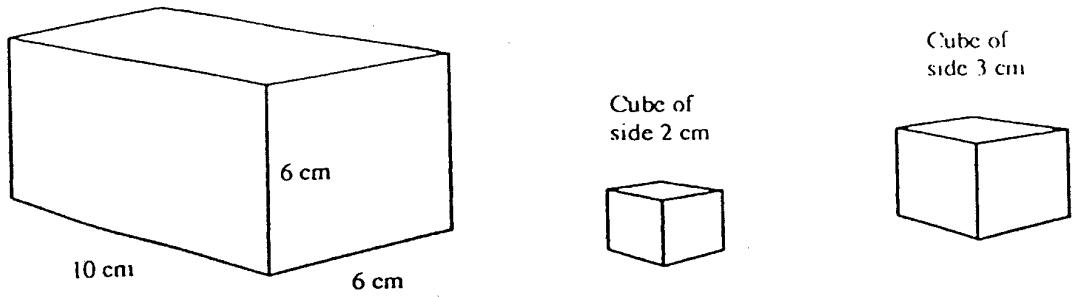
- | | |
|-----------------------------|--------------------------------------|
| A. A camper 8 metres long. | E. A coach 9 metres long. |
| B. A minivan 5 metres long. | F. A car 4 metres long. |
| C. A truck 10 metres long. | G. A car with trailer 6 metres long. |
| D. A minibus 7 metres long. | H. A lorry 11 metres long. |

Write the letters A to H on the plan, showing a possible loading arrangement for the vehicles.

24. Two trains are running, on separate tracks, round a model railway layout. One completes a circuit every 40 seconds and the other every 55 seconds. The trains start together at the station. How long, in minutes and seconds, will it be before they are at the station together again?

Answer: _____ minutes _____ seconds

25. This is a picture of a closed box and two cubes.



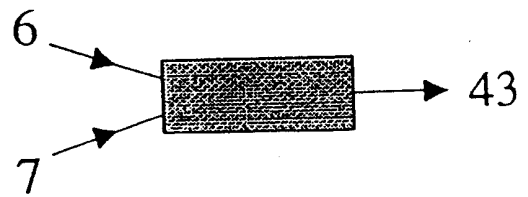
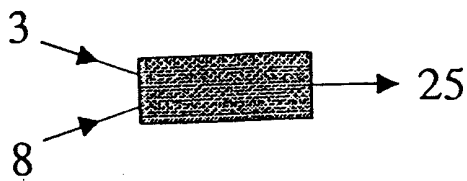
(a) How many cubes of side 2 cm will fit inside the box?

Answer: _____

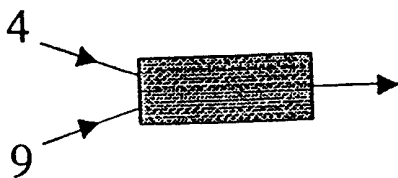
(b) How many cubes of side 3 cm will fit inside the box?

Answer: _____

26. Raj has designed a number machine. Two numbers go in and an answer comes out. Two examples of what the machine does are given below



Fill in the missing numbers in the diagrams below.



Describe in words what the number machines does to the two numbers put into it.

Sample Question Paper Answer Sheet

1. 3272
2. 539
3. 10028
4. 2352
5. 603
6. 0.025
7. $10\frac{1}{2}$
8. 5.106
9. 1.10 p.m.
10. $\frac{1}{12}$
11. 3 years 5 months
12. 0.94
1.68
1.08
3.70
Change = £6.30
13. (a) 480 g, 750 g (b) 1230 g = 1.23 kg
14. (a) 12.20 (b) 280 (c) 140 (d) 1.55
15. 720 metres
16. A : 5 B : 1 C : 4
17. (a) $\frac{3}{10}$ (b) 90 m
18. 8 cm, 3 cm
- 19.

WINTER SALE

20. 750 g
21. Middle diagram in the bottom row.
22. (a) 18 cm (b) 8 cm (c) 40.5 cm
23. For example
Lane 1 E H
Lane 2 A B D
Lane 3 C F G
24. 440 seconds = 7 minutes 20 seconds.
25. (a) 45 (b) 12
26. Missing numbers : 37 and 7
Multiply the two numbers and then add one.