Topic Test: OxfordAQA International GCSE Mathematics Core

Number

Name: _____

Class: _____

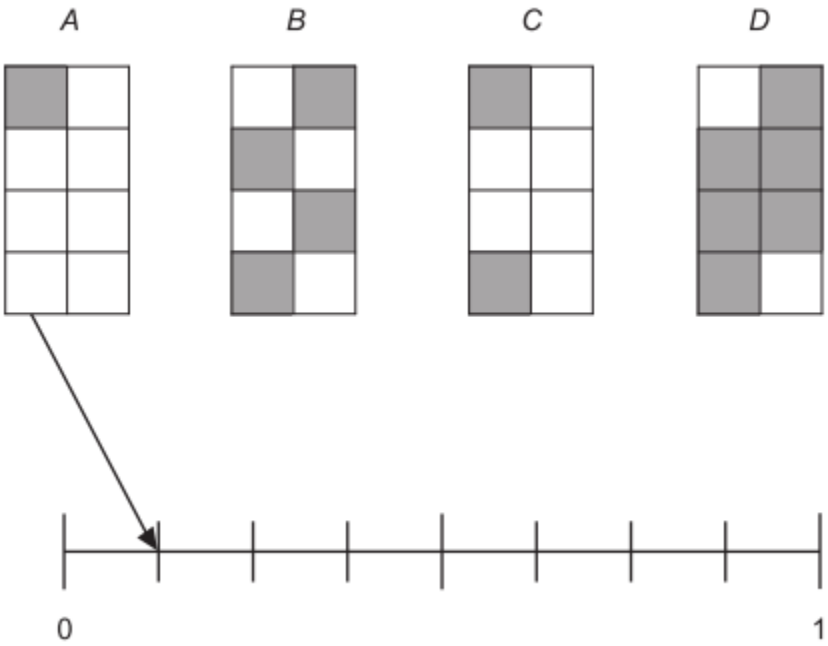
Date: _____

Time: **70 minutes**

Marks: **64 marks**

Comments:

1 (a) Join each shape to the number line to show the fraction shaded.
The first one has been done for you.



(3)

(b) What fraction of this shape is shaded?

Give your answer in its simplest form.

_____

_____

Answer _____

(2)

(Total 5 marks)

2 (a) Write down a prime number between 50 and 60

Answer _____

(1)

(b) Write down the cube number between 20 and 30

Answer _____

(1)

(c) Show that there are **exactly** four even square numbers between 200 and 500

(3)

(Total 5 marks)

3 (a) Write 3.574 to 1 decimal place.

Answer _____

(1)

(b) Put these decimals in order, starting with the smallest.

0.5 0.62 0.325

Answer _____ , _____ , _____

(1)

(c) Circle the **two** values that are equivalent to 0.8

8% $\frac{4}{5}$ 80% $\frac{8}{100}$ $\frac{1}{8}$

(2)

(Total 4 marks)

4 Tea bags are sold in boxes of 80 and boxes of 60

Box A	**Box B**
80 tea bags for $1.45	60 tea bags for $1.05

Which box is better value?

You **must** show your working.

Answer _____

(Total 3 marks)

5 Here are the amounts of some ingredients needed for 12 cupcakes.

12 cupcakes	
310 g	flour
112 g	butter
2	eggs

Complete the list of amounts needed for 30 cupcakes.

(Total 3 marks)

6 Circle the number that is **not** a factor of 20

1 4 8 20

(Total 1 mark)

7 A school hall costs £200 to hire.
Parents get a 10% discount.
30 parents share the cost equally.

How much does each parent pay?

Answer £ _____

(Total 4 marks)

8 Ahmed has $50, rounded to the nearest dollar.

Circle the least amount he could have.

$45 $49 $49.50 $49.99

(Total 1 mark)

9 Set P = {2, 3, 4, 5}

Set Q = {2, 4, 8}

Circle the elements of P ∪ Q

2, 4 | 2, 3, 4, 5, 8 | 3, 5 | 3, 5, 8

(Total 1 mark)

10 Brenda has 100 coloured beads.

27 are red.
41 are blue.
The rest are green.

She wants to make a necklace using all these beads.
She also wants to buy extra beads so she has the same number of each colour.

What is the least number of each colour she needs to buy?

_____

_____

_____

_____

_____

_____

Red _____

Blue _____

Green _____

(Total 4 marks)

11 Kerry needs $\frac{2}{3}$ of a tank of petrol to drive home.

She has $\frac{5}{8}$ of a tank of petrol.

Does she have enough petrol to drive home?
You **must** show your working.

(Total 2 marks)

12 600 people visit a cinema.

$\frac{1}{4}$ go to screen 1.

40% go to screen 2.

The rest go to screen 3.

How many people go to screen 3?

Answer _____

(Total 5 marks)

13 A cinema surveyed 250 customers.

(a) 125 were men.

What fraction were men?
Give your answer in its simplest form.

_____

Answer _____

(2)

(b) 6% of these 250 customers paid for better seats.

How many of them paid for better seats?

_____

_____

Answer _____

(2)

(Total 4 marks)

14 Here are two calculations.

A	B
$4 - \sqrt{20.25}$	$\frac{1.3^2 + 5.51}{-18}$

Which calculation has the smaller answer, A or B?

Show the answer to each calculation.

_____

_____

_____

_____

Answer _____

(Total 2 marks)

15 A toy is made from red bricks and yellow bricks.

Number of red bricks : number of yellow bricks = 5 : 2
There are 210 **more** red bricks than yellow bricks.

How many red bricks are in the toy?

Answer _____

(Total 3 marks)

16 Work out $\frac{3}{4} + \frac{7}{11}$

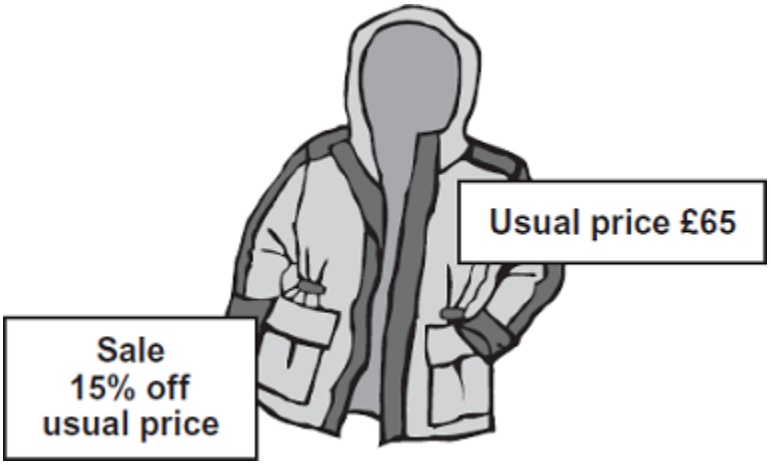
Give your answer as a mixed number.

You **must** show your working.

Answer _____

(Total 3 marks)

17



Work out the sale price.

Answer £ _____

(Total 3 marks)

18 A tiling pattern is made from 48 octagons and 54 squares.

One quarter of the octagons are blue.

One third of **all** the shapes are blue.

How many blue squares are there?

Answer _____

(Total 3 marks)

19 (a) Write 8.36×10^7 as an ordinary number.

Answer _____

(1)

(b) Calculate $560\,200 - 5.13 \times 10^5$

Give your answer in standard form.

Answer _____

(2)

(Total 3 marks)

20 (a) Write 36 as the product of prime factors.
Give your answer in index form.

Answer _____

(3)

(b) Work out the Highest Common Factor (HCF) of 36 and 81.

Answer _____

(2)

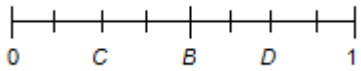
(Total 5 marks)

Mark schemes

1 (a) $B \rightarrow \frac{1}{2}$

Mark intention

e.g.

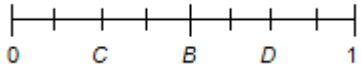


B1

$C \rightarrow \frac{1}{4}$

Mark intention

e.g.

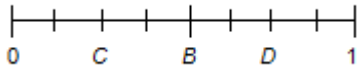


B1

$D \rightarrow \frac{3}{4}$

Mark intention

e.g.



B1

(b) $\frac{9}{12}$ *oe*

M1

$\frac{3}{4}$

SC1 for incorrect fraction fully simplified

SC1 for $\frac{1}{4}$

A1

[5]

2 (a) 53 or 59

B1

(b) 27

B1

(c) **Alternative method 1**

225 or 256 or 289 or 324 or 361 or 400 or 441 or 484

M1

256 and 324 and 400 and 484
or 16^2 and 18^2 and 20^2 and 22^2
or $\frac{22-14}{2} = 4$

M1dep

(14^2 =) 196

and

(23^2 =) 529 or (24^2 =) 576
with working for M2 seen

A1

Alternative method 2

$\sqrt{200} = 14.1...$
or $\sqrt{500} = 22.3...$ or 22.4

M1

$\sqrt{200} = 14.1...$
and $\sqrt{500} = 22.3...$ or 22.4

M1dep

16 and 18 and 20 and 22

or 256 and 324 and 400 and 484
with working for M2 seen

A1

Alternative method 3

$\sqrt{200} = 14.1...$
allow $\sqrt{201} = 14.1...$ *or* 14.2

M1

256 and 324 and 400 and 484
or 16^2 and 18^2 and 20^2 and 22^2
or $\frac{22-14}{2} = 4$

M1dep

$\sqrt{500} = 22.3...$ or 22.4

or (23^2 =) 529 or (24^2 =) 576
with working for M2 seen
allow $\sqrt{499} = 22.3...$

A1

Alternative method 4

$\sqrt{500} = 22.3...$ or 22.4

allow $\sqrt{499} = 22.3...$

M1

484 and 400 and 324 and 256

or 22^2 and 20^2 and 18^2 and 16^2

or $\frac{22-14}{2} = 4$

M1dep

$\sqrt{200} = 14.1...$

or

$(15^2 =)$ 225 or $(14^2 =)$ 196

with working for M2 seen

allow $\sqrt{201} = 14.1...$ *or* 14.2

A1

[5]

3 (a) 3.6

B1

(b) 0.325 0.5 0.62

B1

(c) $\frac{4}{5}$ and 80%

B1 for one correct (and one incorrect) or for two correct and one incorrect

Any indication

B2

[4]

4 **Alternative method 1**

Cost per bag for one box

e.g. 1.45 ÷ 80 or 0.018…

M1

Cost per bag for both boxes

e.g. 1.45 ÷ 80 or 0.018…

and 1.05 ÷ 60 or 0.017(5)

M1dep

0.018… and 0.17(5) and Box B

oe

A1

Alternative method 2

Bags per $ for one box

e.g. 80 ÷ 1.45 or 55.(…)

M1

Bags per $ for both boxes

e.g. 80 ÷ 1.45 or 55.(…)
and 60 ÷ 1.05 or 57.(…)

M1

55.(…) and 57.(…) and Box B

A1

Alternative method 3

$\frac{60}{80} \times 1.45$ or $\frac{80}{60} \times 1.05$

method for cost of 60 As or 80 Bs

M1

1.08(75) or 1.4(0)

A1

1.08(75) (and 1.05) and Box B

or

1.4(0) (and 1.45) and Box B

A1

Alternative method 4

Method for scaling up or down both prices to consistent numbers of tea bags

e.g. for 20 tea bags, 1.45 ÷ 4 and 1.05 ÷ 3

M1

Correct prices for consistent numbers of tea bags

e.g. 0.36(25) and 0.35

A1

Correct prices for consistent numbers of tea bags and Box B

e.g. 0.36(25) and 0.35 and Box B

A1

Additional Guidance

Ignore any units stated

Correct values seen alongside other incorrect working

max 2 marks

Correct comparable values ($) for method 4:

Bags	2	4	5	8	10	20	240	480
A	0.03625	0.0725	0.090625	0.145	0.18125	0.3625	4.35	8.7
B	0.035	0.07	0.0875	0.14	0.175	0.35	4.2	8.4

[3]

5

Alternative method 1

775 ÷ 310 or 2.5

or 30 ÷ 12

oe

may be implied by correct value seen

M1

their 2.5 × 112 or 280

or their 2.5 × 2 or 5

oe

M1dep

280 (for butter)

and 5 (for eggs)

A1

Alternative method 2

112 ÷ 12 or 9.3(33…)

or 2 ÷ 12 or 0.16(66…) or 0.17

oe

may be implied by correct value seen

M1

their 9.3(33…) × 30

or their 0.16(66…) × 30

or their 0.17 × 30

oe

M1dep

280 (for butter)

and 5 (for eggs)

A1

[3]

6 8

B1

[1]

7 $\frac{10}{100} \times 200$ oe or 20 seen

$\frac{90}{100} \times 200$ *oe or 180 is M2*

M1

200 − their 20 or 180 seen

$\frac{90}{100} \times 200$ *oe or 180 is M2*

M1dep

6

A1

Method shown for 90% of 200 and dividing their result by 30

Strand (iii)

Q1

Alternative Method

$\frac{200}{30}$ or $\frac{20}{3}$

oe

M1

$\frac{10}{100} \times$ their $\frac{200}{30}$ or $\frac{2}{3}$

oe

M1dep

6

A1

Method shown for dividing by 30 and finding 90% of their result

Strand (iii)

Q1

[4]

8 $49.50

B1

[1]

9 2, 3, 4, 5, 8

B1

[1]

10 100 − (27 + 41) *oe*

M1

32

A1

Correct minimum numbers for their 32

ft from their 32

B1 buys beads to make each number of each colour equal

R = 14, *B* = 0, *G* = 9 scores 4 marks

or two correct minimum numbers for their 32

SC2 R = 14 and B = 0

SC1 R = 14

B2ft

[4]

11 Correct method to change $\frac{5}{8}$ **and** $\frac{2}{3}$ into fractions with common denominator with at least one correct numerator

eg $\frac{16}{24}, \frac{15}{24}$ *(either way around)*

M1

Correct fractions and No

A1

Alternative method 1

Correct method to calculate $\frac{5}{8}$ of a chosen value **and** $\frac{2}{3}$ of the same value

eg $5 \times 40 \div 8$ *and* $2 \times 40 \div 3$

or

$\frac{5}{8} \times 40$ *and* $\frac{2}{3} \times 40$

M1

Correct evaluations and No

A1

Alternative method 2

Correct method to change $\frac{5}{8}$ **and** $\frac{2}{3}$ into decimals or percentages

M1

$\frac{5}{8}$ = 0.625 or 62.5(%)

Correct and consistent decimals or percentages

and

$\frac{2}{3}$ = 0.66(6…) or 0.67 or 66(6…)(%

or 67(%)

and

No

A1

[2]

12

600 ÷ 4 (= 150) *oe*

M1

$\frac{40}{100}$ × 600 (= 240) *oe*

M1

their 150 + their 240 (= 390)

600 − their 150 (= 450)

or 600 − their 240 (= 360)

M1

600 − their 390

their 450 − their 240

or their 360 − their 150

M1

210

A1

Alternative method 1

25(%)

0.25

M1

their 25(%) + 40(%) (= 65(%))

their 0.25 + 0.4(0) (= 0.65)

M1

100(%) − their 65(%) (= 35(%))

1 − their 0.65 (= 0.35)

M1

$\frac{\text{their } 35(\%)}{100}$ × 600 *oe*

0.35 × 600

M1

210

A1

Alternative method 2

$\frac{2}{5}$ or $\frac{40}{100}$ *oe*

M1

their $\frac{5}{20}$ + their $\frac{8}{20}$ *oe*

makes common denominators with at least 1 correct numerator

M1

1 − (their $\frac{5}{20}$ + their $\frac{8}{20}$) = ($\frac{7}{20}$)

M1 dep

their $\frac{7}{20}$ × 600 *oe*

M1

210

A1

[5]

13 (a) $\frac{125}{250}$ *oe*

M1

$\frac{1}{2}$

Must be a fraction

A1

(b) $\frac{6}{100}$ × 250 *oe*

M1

15

SC1 235

A1

[4]

14 −0.5 and −0.4 and A

B1 −0.5 or −0.4

oe

B2

Additional Guidance

May show choice by selecting −0.5 rather than A

$-\frac{1}{2}$ and $-\frac{2}{5}$ and A

B2

[2]

15 5 − 2 (= 3)

oe

M1

$\frac{210}{\text{their } 3}(\times 5)$ or 70 seen

70 seen is M2 but not from 50 + 20

M1 dep

350

SC2 490 or 140

A1

Alternative method

50 : 20

Or equivalent ratio with a bigger difference

M1

350 : 140

M1 dep

350

SC2 490 or 140

A1

[3]

16 $\frac{33}{44}$ and $\frac{28}{44}$

oe common denominator with at least one numerator correct

M1

$\frac{61}{44}$ with correct working seen

oe fraction

A1

$1\frac{17}{44}$ with correct working seen

ft their improper fraction correctly converted with M1 awarded

A1 ft

Additional Guidance

Working in decimals scores M0A0 unless recovered

[3]

17

6.5 or 3.25 seen

M1

9.75

or 6.5 + 3.25

or 65 − (6.5 + their 3.25)

or 65 − (their 6.5 + 3.25)

M1dep

55.25

A1

Alternative method 1

0.15 × 65 *oe*

M1

9.75

or 65 − their (0.15 × 65) oe

M1dep

55.25

A1

Alternative method 2

0.85 *oe*

M1

0.85 × 65 *oe*

M1dep

55.25

A1

[3]

18

48 ÷ 4 or 12

M1

(48 + 54) ÷ 3 or 102 ÷ 3 or 34 *oe*

M1

22

A1

[3]

19 (a) 83 600 000

B1

(b) $4.72(00) \times 10^4$

B1 47 200

or correct number not in standard form

B2

[3]

20 (a) 18 (×) 2 or 12 (×) 3 or 9 (×) 2 (×) 2

Allow on prime factor tree or repeated division

or 3 (×) 3 (×) 4 or 2 (×) 3 (×) 6

Condone 18 (×) 2 (×) 1 etc. for this mark

M1

2 (×) 2 (×) 3 (×) 3

Allow on prime factor tree or repeated division

A1

$2^2 \times 3^2$

ft any product of prime numbers in index form if M1 awarded

A1ft

(b) 9

B1 answer 3 or 3^2 or 3×3

or $81 = 3^4$ or 3 (×) 3 (×) 3 (×) 3

B2

[5]