The King's School, Canterbury

Entrance Examinations (13+)

2010

Mathematics

One Hour

Answer as many questions as possible, presenting your answers clearly and neatly and showing all relevant working on the file paper provided.
Calculators may be used in any question unless stated otherwise. In a question where a calculator is prohibited, your working must display sufficient detail to show that it has not been used.
There are likely to be more questions on the paper than you can do in the time allowed. Do not worry about this. If you cannot do a question, leave it and go on to the next. You need to work fast to get to the end of the paper. There are sixty-five marks in total.

NAME: .... AGE: ....

PRESENT SCHOOL: ....

Total:	/65	=	%

Q1. (a)   Write 12.0081 correct to 2 decimal places.

(b)   Write 0.07266 to two significant figures.

[4]

Q2.   Use your calculator to find

(i) $0.38 \times \sqrt{0.49}$, writing your answer exactly;

[2]

(ii) $\dfrac{0.38 \times \sqrt{0.49}}{1.135 \times 0.661}$, writing all the figures on your calculator display.

[2]

Q3. (a)   A few years ago I bought some chairs for £625. I recently sold them at auction for £775. What percentage profit is that?

[2]

(b)   I had to pay 5% of the sale price as commission. How much was that?

[2]

(c)   I sold some more chairs for £435, which gave me a profit of 16%.

What had I originally bought them for?

[3]

Q4.   Simplify as far as possible:

(a) $3x + 5y - 5x + 2y$

[2]

(b) $4(3x - 7)$

[2]

Q5.   Convert 72 km/h (kilometres per hour) into m/s (metres per second). (Show working)

[4]

Q6. Arrange in order of ascending size (smallest first):

(a)   0.93,   0.309, 0.093, 0.39,   0.903

[2]

(b)   –3,   6,   –9,   3,   - 1

[2]

Q7. Solve

(a) $4(2x+1) = 8$

[2]

(b) $4x - 5 = x + 10$

[3]

(c) $\dfrac{x}{3} - 7 = 2$

[3]

Q8. The table shows the numbers of girls, boys, boarders and day pupils at the school; also given are total boys, total girls etc. The grand total of all pupils is 784.

	Boarders	Day Pupils	Total
Boys	325		423
Girls	284	77	361
Total	609	175	784

(a)   Find the missing number of day boys

[1]

(b)   What percentage of the girls are boarders?

[2]

Q9. (a)   Share 45 kg in the ratio 3:2

[1]

(b)   A 5 person syndicate wins a National Lottery prize of £48 000. Alice, Charles and David had each paid £1, while Brian had paid £2 and Elizabeth £3. How much of the prize money should Elizabeth get?

[3]

Q10. Work these out **without a calculator**, giving your answers in their simplest form

(a) $3\frac{1}{2} + 2\frac{3}{5}$

[4]

(b) $3\frac{1}{2} \div 5\frac{1}{4}$

[4]

Q11. (a)   One of the School's activities consists of a walk.
On a map of scale 1 : 25 000 the length of the walk one week was 30 cm.
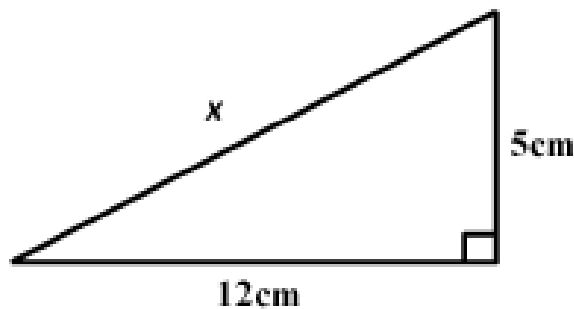How far was the walk in km?

[2]

(b)   A straight 15 km stretch of motorway is represented on a map by a line of length 7 ½ cm. What is the map scale?

[2]

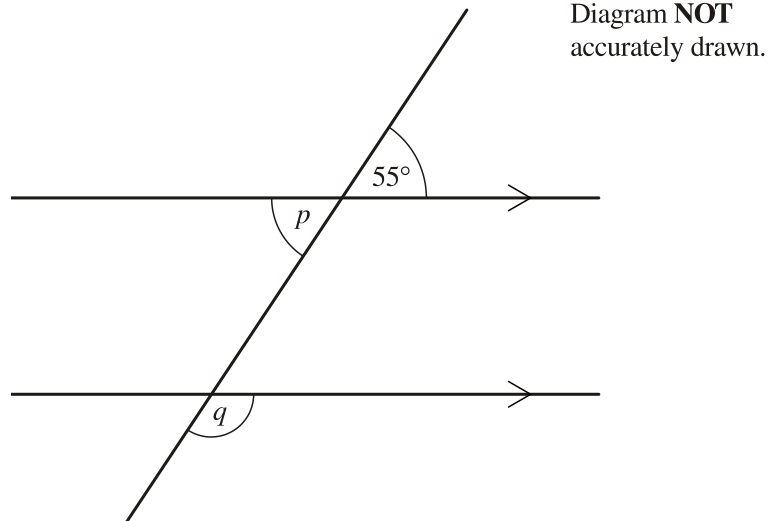**Q12.** For the numbers 12 and 20, find

(a) the Highest Common Factor

[2]

(b) the Lowest Common Multiple.

[2]

Q13. Calculate x in the following triangle

[3]

Q14.

Diagram **NOT**
accurately drawn.

55°

p

q

(a) Work out the size of angle *p*. Give a reason for your answer.

[2]

(b) Work out the size of angle *q*. Give reasons for your answer.
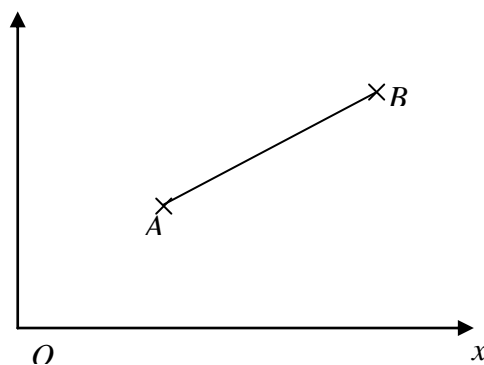
[2]

Q15.

×*B*

Diagram **NOT**
accurately drawn
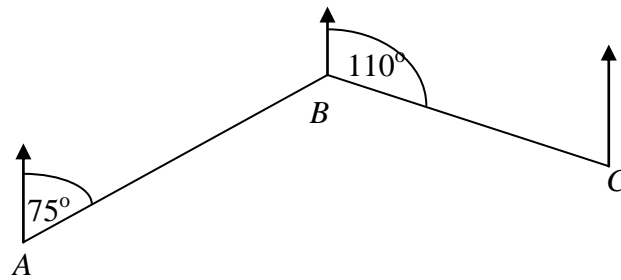
×
A

O

x

A has coordinates (4, 7)

B has coordinates (7, 19)

Find the coordinates of the mid-point of the lines *AB*.   [3]

Q16.

(a) What is the bearing of B from A?

(b) What is the bearing of B from C?

[2]

End of paper. Now go back and check your answers.