



Junior Entrance and Scholarship Examination 2014 First Form Entry

Mathematics

Time Allowed: 1 hour

Instructions

- All candidates must answer Section A (but *may* attempt questions from Section B if they have time).
- Scholarship candidates must answer Sections A and B. It is suggested that these candidates spend no more than 45 minutes on Section A.
- All working and answers must be shown on this paper. Marks will be given for demonstrating your method.
- Calculators are *not* permitted.

Section A

1. (a) Work out 45 + 97.

(b) Work out 30732 – 2858.

(c) Work out 69×32 .

(d) Work out $765 \div 3$.

(e) Work out $765 \div 45$.

(g) Work out 23456 + 47651 - 23455.

Answer

Answer

Answer

Answer

Answer

Answer

2. Write as a number: Eight hundred million eight thousand and twenty four.

Answer

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- 3. Calculate the following
 - (a) 1+2-3+4-5
 - (b) $1 \times (-2) \times 3 \times (-4) \times 5$
 - (c) $(1 + (2 3) 4) \times 5$

Answer

Answer

Answer

4. (a) How many squares, of *any* size, appear in the diagram below?

Answer

(b) The diagram above showed a 2 × 4 rectangle. How many squares, of *any* size, would appear in a similar diagram of a 3 × 5 rectangle?

Answer

(c) In a $2 \times n$ diagram, there are 2999 squares. What is the value of n?



5. (a) Write down the coordinates of the points marked A, B and C.

Answer: A is at (....,) B is at (....,) C is at (....,)

(b) Write down the name of the shape formed by the points ABC.

Answer

(c) Find the area of the shape formed by the points ABC.

Answer

(d) At what coordinates should a 4th point, D, be placed so that the shape ABCD is a parallelogram?

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- 6. In each sequence below, there is a rule for finding the next term. Find the next *two* terms in each sequence by identifying the rule.
 - (a) 8, 5, 2, -1,
 (b) 8.6, 9.7, 10.8, 11.9,
 (c) 1, 2, 4, 8,

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Answers ....., ......
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7. Albert was using his calculator to work out the answers to some calculations. He couldn't remember which answer went with which question though. Match each question with the correct answer by *estimating. Show the numbers you have used to make your estimations.*

Questions	Answers
$\frac{49 \times 208}{191}$	26.12844037
$19.78^2 + \sqrt{10007}$	491.2833939
(113 – 24)(32 ÷ 109)	2.009843660
$\frac{89}{22} \times \frac{234}{471}$	53.36125654

You may use this blank space for any calculations you do, but make sure to pair up the questions and answers above.

8. Write the following numbers in order, starting with the lowest.

4	3	10	2	6
_				
7	7	14	7	7

Answer,,,,

9. (a) I think of a number, then subtract nine. The result is seventeen. What was the original number?

Answer

(b) I think of a number, multiply it by three, then subtract nine. The result is forty-five. What was the original number?

Answer

(c) I think of a number, double it, then add five. The result is minus thirteen. What was the original number?

Answer

10. Find

(a) 33% of 150.

Answer:

(b) $\frac{5}{8}$ of 136.

11.	You Any	ou have the numbers -7 , -1 , 0.5 and 9 available. ny of these numbers can be used in each part of the question.	
	(a)) What is the highest number that can be obtained by adding	g two of the above numbers?
			Answer:
	(b)) What is the lowest number that can be obtained by adding	two of the above numbers?
			Answer:
	(c)) What is the highest number that can be obtained by subtra	cting two of the above numbers?
			Answer:
	(d)	What is the lowest number that can be obtained by multip	lying two of the above numbers?
			Answer:
12.	Wri	rite down the missing number in each part:	
	(a)) $1 400 \times ? = 70\ 000$	
		Answe	r:
	(b)	$1400 \times ? = 700$	
		Answe	r:
	(c)) $1400 \div ? = 7$	

13. (a) What is the angle between the hands of a clock at 3:00?

Answer:

(b) What is the angle between the hands of a clock at 3:15?

Answer:

14. Calculate $3428 \times 836 + 3428 \times 162 + 3428 \times 2$.

15.	On Use	the next page is the timetable for a bus service between Peterborough a the timetable to answer the following questions.	and Milton	Keynes.
	(a)	What time is the first bus from Peterborough Queensgate?		
	(b)	What time is the first bus from Corby Business Academy on a Saturd	Answer: ay?	
	(c)	Betsy takes the 0756 from Corby rail station. How long does the journey to Wellingborough Church Street take?	Answer:	
	(d)	Carmen takes the 1252 from Weldon. At what time does she arrive at Roade?	Answer:	
	(e)	Archie needs to arrive at Earls Barton by 2:30pm. What is the latest bus he can take from Corby Danesholme Road?	Answer:	
	(f)	Darcy catches the 1317 bus from Kettering Parkway. What is the earliest time she can arrive at Grafton Regis?	Answer:	
	(g)	How many times does this bus service stop at Corby Rail Station betw Wednesday?	Answer: veen 0700	and 1502 on a
			Answer:	

Peterborough Contra Kettering	orough	Miltor	terne	5 5													
Mondays to Saturdays except public holidays	5																
								•									
Peterborough Queensgate bus stn bay 15							0705		0740		0910			10			1410
Warmington services							0722		0812		0927			27			1427
Oundle Market Place							0730		0820		0935			35			1435
Lower Benefield phone box							0/3/		0827		0942			42			1442
Upper Benefield Wheatsheaf							0740		0830		0945			45			1445
Weldon Londis store							0/4/		0837	(0004)	0952	1005		52			1452
Corby Business Academy							0754		-	0904	0050	1005		-	05		1450
Corby Cardigan Arms							0754		0844	0917	0959	1018		59	18		1459
Corby rail station							0756		0846	0919	1001	1020		01	20		1501
Corby George Street stop A arr							0801		0851	0926	1006	1027		06	21		1506
same bus - no need to change				000	OCEE	0725	0010	0940	8	8	8	8	'n	8	8		1510
Corby George Street stop A dep				0625	0655	0725	0810	0840	0910	0940	1010	1040	- ho	10	40		1510
Corby Gainsborough Road, Greenmin Rise				0620	0702	0720	0815	0045	0915	0945	1015	1045	ach	15	45		1515
Kottoring Pockingham Pd/Noale Avenue				0632	0702	0732	0100	0852	0916	0940	1010	1040	st e	10	40		1510
Kettering Fockligham Romeale Avenue		0547	0610	0641	0717	0741	0822	0002	0922	1002	1022	1052	pas	22	52	-	1522
Kettering Eskdall Street stop 8	0525	0547	0610	0655	0717	0747	0832	0902	0932	1002	1032	1110	ins	32	10	Inti	1532
Wickstood Park Putchlay Road (AE00)	0535	0552	0615	0655	0725	0755	0840	0015	0940	1010	1040	1115	E	40	10	2	1540
Kottoring Parkway	0530	0555	0670	0000	0720	0756	0845	0915	0945	1015	1045	1117	les	45	17		1545
Isham opp Monk & Minstrel	0540	0600	0623	0700	0730	0803	0850	0917	0947	1077	1047	1120	at th	50	20		1550
Wellinghorough Church Street stop C	0558	0615	0623	0703	0733	0803	0005	0920	1005	1020	11050	1120	e ua	05	20		1605
Wellingborough Northampton Road	0605	0622	0645	0725	0740	0825	0903	0933	1005	10/12	1112	11/2	th€	12	42		1612
Willby Working Mens Club	0606	0622	0645	0725	0755	0825	0912	0942	1012	1042	1115	11/15		15	42		1615
Farls Barton Elizabeth Way/police house	0614	0628	0651	0720	0802	0832	0970	0950	1070	1050	1120	1150		20	50		1620
Northampton Cliftonville Road for NGH	0014	0645	0708	0801	0831	0901	0936	1006	1020	1106	1136	1206		36	06		1636
Northampton Greyfriars bus sto bay 20 arr	0635	0649	0712	0805	0835	0905	0930	1010	10/0	1110	11/0	1210		40	10		1640
same bus - no need to change	8	0045	0/12	0005	8	0505	8	1010	8	1110	8	1210		R	10		8
Northampton Grevfriars bus stn bay 20 den	0640		0730		0845		0945		1045		1145			45			1645
Northampton Delapre Park Gates	0647		0737		0852		0952		1052		1152			52			1652
Grange Park Saxon Avenue	0655		0745		0859		0959		1059		1159			59			1659
Boade Hyde Boad	0700		0750		0905		1005		1105		1205			05			1705
Grafton Regis White Hart	0704		0754		0909		1009		1109		1209	1		09			1709
Milton Keynes rail station ston Y4	0720		0810		0925		1025		1125		1225			25			1725
Central Milton Keynes stops H3 & B3	0730		0820		0935		1025		1135		1235			35			1735
 this journey runs via Earls Barton Square, Ecton ar between Wilby and Northampton 	id Wellin	ngborou	gh Road	(A4500	1)		1035		1135		1255			tim	netable on	conti next	nues page
at Elizabeth Way in Earls Barton, buses stop oppos for details, see leaflet for routes X46/X47	ite the p	olice ho	ouse														
 this journey runs via Elton, Alwalton, and Lynch We for full details, see route 23/24 leaflet 	bod						Вто	comply	with dri	vers' ho	urs regu	lations, X	4 conne	ects at	Corb	y and	
(Mondays to Fridays only) Saturdays only)							No ava	irthampt ilable an	ton.The 1d passe	connect ngers ca	ion is gu n stay or	uaranteed, n the bus	throug which o	h fare	s are es thro	ough.	

Above - Sample from a bus timetable

Section B

1. The pattern 123451234512345... is continued to form a 2000-digit number. What is the sum of all 2000 digits?

Answer

2. Einstein can afford to buy either 6 apples and 7 bananas or else 8 apples and 4 bananas. Both options leave him with no change whatsoever. If, however, he bought only bananas, who many could he afford?

3. (a) In the England tiddly-winks squad there are five players. A team of three is to be selected to compete. How many different teams of three are possible?

Answer

(b) The team of three play one game each. If none of these matches are played at the same time, how many different orders could the games be played in?

Answer

(c) There is also an individual knockout tournament in which 16 people are allowed to enter. How many games are played to decide the winner? (*The loser in each game is out of the tournament*)

4. Seven rolls weigh the same as four crumpets. Five scones weigh the same as six crumpets. Each crumpet weighs *c* grams, and each roll weighs *r* grams, and each scone weighs *s* grams. Write *c*, *r* and *s* in order of size, starting with the smallest. (*Explain your reasoning carefully – few marks will be awarded for an isolated answer*).

- Paul and Quentin are running directly towards each other. They start from the points A and B respectively.
 Paul runs at 5miles per hour, and Quentin runs at 7 miles per hour.
 - (a) If they meet after 10 minutes, how far apart are the points A and B in miles?

Answer

(b) The point M is half-way between A and B. Who passes this point before they meet, and how long after they set out does this person pass M?

Who

When

6. A crossnumber is like a crossword, except that all the answers are numbers instead of words (with one digit in each square, and no answer starting with the digit zero).
How many different solutions are there to the crossnumber below?
(You must explain your reasoning carefully, including why there are no more than the number you

calculate)

Clues

ACROSS	DOWN
1. Prime	1. Prime
3. Square	2. Square
5. Prime	4. Square

1	2	
3		4
	5	