



**Mathematics Enhancement Programme  
Demonstration Project**

# **Practice Book**

## **Certificate of Educational Achievement Year 11**

This is one component of MEP Mathematics resources for Y10 and Y11.

All enquiries regarding these resources should be addressed to

Mathematics Enhancement Programme

CIMT, Faculty of Arts and Education

University of Plymouth

Exmouth EX8 2AT

Tel: 01395 255521

Fax: 01395 255422

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# 16 Number Concepts 4

## 16.1 Multiplying and Dividing by 10 and 100

1. Do these calculations in your head. Only write down the answers.

(a)  $10 \times 4$

(b)  $10 \times 8$

(c)  $9 \times 10$

(d)  $3 \times 10$

(e)  $12 \times 10$

(f)  $10 \times 24$

(g)  $10 \times 20$

(h)  $100 \times 10$

(i)  $100 \times 3$

(j)  $5 \times 100$

(k)  $100 \times 20$

(l)  $100 \times 40$

(m)  $70 \times 100$

(n)  $10 \times 500$

(o)  $100 \times 70$

(p)  $50 \times 10$

(q)  $7 \times 100$

(r)  $10 \times 90$

(s)  $100 \times 90$

(t)  $5 \times 10$

(u)  $20 \times 10$

(v)  $2 \times 100$

(w)  $14 \times 10$

(x)  $100 \times 17$

(y)  $10 \times 10$

(z)  $0 \times 100$

2. Work these out in your head and write down your answers.

(a)  $70 \div 10$

(b)  $200 \div 10$

(c)  $10 \div 10$

(d)  $400 \div 100$

(e)  $700 \div 100$

(f)  $300 \div 10$

(g)  $90 \div 10$

(h)  $500 \div 100$

(i)  $800 \div 10$

(j)  $4000 \div 100$

(k)  $80 \div 10$

(l)  $10 \times \dots = 100$

(m)  $5 \times \dots = 50$

(n)  $\dots \times 7 = 700$

(o)  $8 \times \dots = 80$

(p)  $30 \times \dots = 300$

(q)  $\dots \times 40 = 4000$

(r)  $100 \times \dots = 200$

(s)  $\dots \times 100 = 3000$

(t)  $10 \times \dots = 5000$

(u)  $\dots \times 6 = 60$

(v)  $12 \times \dots = 1200$

3. Write the number which is,
- |                        |                        |
|------------------------|------------------------|
| (a) 10 more than 40    | (b) 10 more than 38    |
| (c) 10 more than 172   | (d) 10 more than 95    |
| (e) 10 less than 53    | (f) 10 less than 15    |
| (g) 10 less than 142   | (h) 10 less than 209   |
| (i) 100 more than 68   | (j) 100 more than 252  |
| (k) 100 more than 1246 | (l) 100 less than 751  |
| (m) 100 less than 967  | (n) 100 less than 1371 |
| (o) 100 more than 2540 | (p) 10 less than 1567  |
| (q) 1 less than 100    | (r) 1 less than 709    |
| (s) 1 more than 1020   | (t) 1 more than 999    |
- 4.
- |                          |                           |
|--------------------------|---------------------------|
| (a) 300 = ..... tens     | (b) 40 = ..... tens       |
| (c) 500 = ..... tens     | (d) 600 = ..... tens      |
| (e) 1000 = ..... tens    | (f) 700 = ..... hundreds  |
| (g) 800 = ..... hundreds | (h) 1200 = ..... hundreds |
| (i) 4000 = ..... tens    | (j) 7000 = ..... hundreds |
| (k) ..... = 40 tens      | (l) ..... = 8 hundreds    |
| (m) ..... = 90 hundreds  | (n) ..... = 100 tens      |
| (o) 1000 = ..... tens    | (p) 2000 = ..... hundreds |
5. Write down the answers to the following,
- |                      |                      |
|----------------------|----------------------|
| (a) $28 \times 10$   | (b) $42 \times 100$  |
| (c) $70 \times 10$   | (d) $124 \times 10$  |
| (e) $94 \times 10$   | (f) $236 \times 10$  |
| (g) $51 \times 10$   | (h) $24 \times 100$  |
| (i) $97 \times 100$  | (j) $121 \times 100$ |
| (k) $574 \times 100$ | (l) $942 \times 100$ |
| (m) $758 \times 100$ | (n) $12 \times 100$  |

6. Answer these problems,

- |                                       |                                     |
|---------------------------------------|-------------------------------------|
| (a) If one pencil costs 8p,           | (b) If 10 apples cost 50p,          |
| (i) 10 pencils cost . . . . .         | (i) 1 apple costs . . . . .         |
| (ii) 100 pencils cost . . . . .       | (ii) 100 apples cost . . . . .      |
| (c) A box of 100 pens costs £100.     | (d) A bicycle costs £200,           |
| (i) 1 pen costs . . . . .             | (i) 10 bicycles cost . . . . .      |
| (ii) 10 pens cost . . . . .           | (ii) 100 bicycles cost . . . . .    |
| (iii) 10 boxes of pens cost . . . . . |                                     |
| (e) If 100 sweets cost £1,            | (f) 10 gallons of petrol costs £30, |
| (i) 1 sweet costs . . . . .           | (i) 1 gallon costs . . . . .        |
| (ii) 10 sweets cost . . . . .         | (ii) 100 gallons costs . . . . .    |
|                                       | (iii) 50 gallons costs . . . . .    |

## 16.2 Addition

Add the following sets of numbers.

- |                    |                 |                 |
|--------------------|-----------------|-----------------|
| 1. (a) $42 + 5$    | (b) $71 + 8$    | (c) $84 + 5$    |
| (d) $91 + 8$       | (e) $27 + 4$    |                 |
| 2. (a) $58 + 13$   | (b) $43 + 12$   | (c) $74 + 28$   |
| (d) $64 + 27$      | (e) $72 + 38$   |                 |
| 3. (a) $246 + 5$   | (b) $471 + 6$   | (c) $128 + 9$   |
| (d) $255 + 5$      | (e) $584 + 7$   |                 |
| 4. (a) $716 + 25$  | (b) $841 + 19$  | (c) $952 + 38$  |
| (d) $147 + 30$     | (e) $743 + 58$  |                 |
| 5. (a) $942 + 35$  | (b) $278 + 51$  | (c) $451 + 78$  |
| (d) $784 + 77$     | (e) $821 + 94$  |                 |
| 6. (a) $422 + 371$ | (b) $579 + 210$ | (c) $351 + 163$ |
| (d) $848 + 214$    | (e) $777 + 210$ |                 |
| 7. (a) $512 + 634$ | (b) $485 + 694$ | (c) $241 + 894$ |
| (d) $735 + 300$    | (e) $947 + 238$ |                 |

8. For these questions, write out a calculation and find the answer.
- (a) I have 17 apples and 12 oranges. How many pieces of fruit do I have?
  - (b) Tim delivers 42 papers on Tuesday and 74 on Wednesday. How many does he deliver in total on these two days?
  - (c) A coach can hold 52 people. How many people can 2 coaches hold?
  - (d) The score at the end of a rugby match was 23 – 51. How many points were scored in total?
  - (e) What is the total of 124 and 368?
  - (f) In my street there are 124 houses on the left and 128 on the right. How many houses are there altogether?
  - (g) A cricket team scores 544 runs in their first innings and 278 in the second. How many runs is this in total?
  - (h) 328 people go to a cinema on Thursday and 542 people go on Friday. How many people is this in total?
  - (i) I have £148 in my bank account. If I pay in £784, what is my new balance?
  - (j) A factory produces 843 cars and 428 vans per week. How many vehicles in total does it produce each week?
  - (k) A ferry holds 731 foot passengers and 572 car passengers. What is its total passenger capacity?
9. Work out:
- (a)  $74 + 21 + 14$
  - (b)  $52 + 13 + 41$
  - (c)  $78 + 25 + 61$
  - (d)  $17 + 18 + 19$
  - (e)  $94 + 50 + 71$
10. Work out:
- (a)  $124 + 93 + 12$
  - (b)  $256 + 321 + 518$
  - (c)  $72 + 940 + 31$
  - (d)  $85 + 850 + 7$
  - (e)  $421 + 378 + 94$
  - (f)  $756 + 340 + 814$
  - (g)  $812 + 942 + 371$
  - (h)  $57 + 100 + 94$
  - (i)  $131 + 401 + 342$
  - (j)  $666 + 94 + 38$
  - (k)  $171 + 343 + 739$
  - (l)  $50 + 900 + 427$
  - (m)  $258 + 799 + 400$
  - (n)  $366 + 938 + 542$
  - (o)  $470 + 159 + 777$

## 16.3 Subtraction

Work out:

1. (a)  $43 - 12$  (b)  $56 - 23$  (c)  $35 - 21$   
(d)  $24 - 14$  (e)  $18 - 14$
2. (a)  $856 - 821$  (b)  $731 - 711$  (c)  $266 - 141$   
(d)  $353 - 130$  (e)  $938 - 233$
3. (a)  $64 - 8$  (b)  $54 - 7$  (c)  $41 - 5$   
(d)  $96 - 7$  (e)  $63 - 6$
4. (a)  $81 - 44$  (b)  $98 - 39$  (c)  $42 - 33$   
(d)  $95 - 49$  (e)  $73 - 29$
5. (a)  $980 - 37$  (b)  $960 - 543$  (c)  $450 - 39$   
(d)  $991 - 82$  (e)  $864 - 516$
6. (a)  $652 - 328$  (b)  $144 - 71$  (c)  $374 - 165$   
(d)  $577 - 148$  (e)  $784 - 548$
7. (a)  $159 - 99$  (b)  $400 - 236$  (c)  $146 - 98$   
(d)  $387 - 138$  (e)  $700 - 321$
8. Write out a calculation and find the answer for each of these:
  - (a) I start with 72 sweets and I eat 29. How many sweets have I left?
  - (b) A shop has 144 cans of cola in the morning. At the end of the day they have 78. How many cans did they sell?
  - (c) A bus has 58 passengers. If 27 get off, how many are left on?
  - (d) A basketball match finishes with the score at  $121 - 94$ . What is the difference in the scores?
  - (e) Jon has to deliver 948 leaflets. He delivers 278 on Monday. How many has he left?
  - (f) Sam has 258 records in his collection. Liz has 371 records. How many more does Liz have than Sam?
  - (g) Katie goes shopping with £270. She buys a dress costing £97. Can she now afford a coat which costs £180?

- (h) A cricket team scores 328 runs. Their opponents score 172 runs. What is the winning margin?
- (i) 921 people are on a train. If 738 get off in London, how many remain on the train?
- (j) I have £373 in my bank account. I pay a gas bill and then have £159 left. How much was the gas bill?
- (k) A salesman needs to sell 700 cars a week. If he sells 384 by Wednesday, how many must he still sell to reach his target?
- (l) A school has 483 boys in it. If there are 734 pupils altogether, how many girls are in the school?

9. Work out:

- |                 |                 |                 |
|-----------------|-----------------|-----------------|
| (a) $73 - 41$   | (b) $91 - 30$   | (c) $120 - 50$  |
| (d) $278 - 135$ | (e) $747 - 318$ | (f) $976 - 639$ |
| (g) $804 - 273$ | (h) $700 - 246$ | (i) $97 - 59$   |
| (j) $664 - 581$ | (k) $731 - 699$ | (l) $873 - 617$ |
| (m) $500 - 212$ | (n) $726 - 149$ | (o) $893 - 28$  |
| (p) $153 - 12$  | (q) $806 - 294$ | (r) $348 - 179$ |
| (s) $999 - 340$ | (t) $678 - 294$ | (u) $700 - 586$ |
| (v) $900 - 71$  | (w) $548 - 399$ | (x) $716 - 648$ |

## 16.4 Multiplication

Work out:

- |    |                   |                   |                   |
|----|-------------------|-------------------|-------------------|
| 1. | (a) $13 \times 3$ | (b) $12 \times 4$ | (c) $14 \times 2$ |
|    | (d) $13 \times 2$ | (e) $21 \times 5$ |                   |
| 2. | (a) $16 \times 4$ | (b) $17 \times 5$ | (c) $24 \times 6$ |
|    | (d) $38 \times 3$ | (e) $41 \times 4$ |                   |
| 3. | (a) $46 \times 8$ | (b) $51 \times 7$ | (c) $21 \times 9$ |
|    | (d) $14 \times 7$ | (e) $72 \times 6$ |                   |
| 4. | (a) $60 \times 4$ | (b) $70 \times 8$ | (c) $30 \times 5$ |
|    | (d) $20 \times 6$ | (e) $50 \times 9$ |                   |

5. (a)  $71 \times 7$  (b)  $38 \times 9$  (c)  $54 \times 8$   
(d)  $64 \times 7$  (e)  $31 \times 9$
6. (a)  $92 \times 7$  (b)  $86 \times 8$  (c)  $84 \times 9$   
(d)  $77 \times 7$  (e)  $98 \times 9$
7. (a)  $76 \times 6$  (b)  $49 \times 7$  (c)  $58 \times 5$   
(d)  $94 \times 3$  (e)  $112 \times 4$
8. Write out a calculation for each of these to help you, and then work out the answers:
- (a) If a box holds 72 oranges, how many will 6 boxes hold?
  - (b) A bus can carry 52 passengers, How many can 8 buses carry?
  - (c) A car travels 36 miles on one gallon of petrol. How far will it travel on 8 gallons?
  - (d) Books cost £17 each. How much do 9 books cost?
  - (e) I buy 36 apples at 9p each. How much do I pay?
  - (f) In my garden there are 8 rows of cabbages. If there are 43 in each row, how many cabbages do I have in total?
  - (g) A milk crate holds 18 bottles. How many bottles are there in 5 full crates?
  - (h) A basketball shot gives 3 points. How many points will you score from 93 shots?
  - (i) How many runs will 23 fours score in cricket?
  - (j) An American football team scores 73 touchdowns in a season. If a touchdown is worth 6 points, what is the total value of the season's touchdowns?
  - (k) A cross channel ferry journey to France is 33 miles. How far will the ferry travel in 7 journeys?
  - (l) A lorry can hold 22 tonnes of goods. What weight of goods can 6 lorries carry?
  - (m) A salesman gets 9p per mile for travel expenses. How much will he get for travel expenses if he travels 428 miles?
9. Work out:
- (a)  $14 \times 3$  (b)  $12 \times 7$  (c)  $19 \times 4$
  - (d)  $34 \times 5$  (e)  $9 \times 21$  (f)  $7 \times 52$
  - (g)  $8 \times 18$  (h)  $56 \times 7$  (i)  $64 \times 9$

(j)  $93 \times 5$

(k)  $7 \times 36$

(l)  $28 \times 4$

(m)  $36 \times 3$

(n)  $9 \times 27$

(o)  $8 \times 41$

(p)  $3 \times 21$

(q)  $14 \times 7$

(r)  $31 \times 9$

(s)  $48 \times 6$

(t)  $50 \times 5$

(u)  $7 \times 25$

(v)  $9 \times 99$

(w)  $13 \times 18$

(x)  $77 \times 8$

## 16.5 Division

Work out:

1. (a)  $20 \div 2$

(b)  $42 \div 2$

(c)  $39 \div 3$

(d)  $44 \div 4$

(e)  $50 \div 5$

2. (a)  $36 \div 4$

(b)  $35 \div 7$

(c)  $32 \div 8$

(d)  $42 \div 7$

(e)  $81 \div 9$

3. (a)  $69 \div 3$

(b)  $64 \div 4$

(c)  $72 \div 9$

(d)  $56 \div 8$

(e)  $65 \div 5$

4. (a)  $49 \div 7$

(b)  $96 \div 8$

(c)  $52 \div 4$

(d)  $27 \div 9$

(e)  $88 \div 4$

5. (a)  $43 \div 2$

(b)  $67 \div 3$

(c)  $72 \div 5$

(d)  $87 \div 6$

(e)  $99 \div 9$

6. (a)  $93 \div 4$

(b)  $58 \div 7$

(c)  $73 \div 2$

(d)  $94 \div 8$

(e)  $70 \div 3$

7. (a)  $57 \div 4$

(b)  $75 \div 5$

(c)  $38 \div 6$

(d)  $81 \div 7$

(e)  $94 \div 6$

8. Write a calculation for each of these and work them out:

(a) If I divide £21 equally between 3 boys, how much will they each get?

(b) How many cars are needed to carry 44 children if 4 children can travel in each car?

(c) A class of 24 children is divided into equal teams. How many children would be in each team if there were

(i) 4 teams,

(ii) 8 teams,

(iii) 6 teams?

- (d) A pack of sweets holds 40 sweets. Five people share them equally. How many sweets do they each get?
- (e) A 5-a-side team wins £45. How much does each of the 5 players get if the money is divided equally between them?
- (f) 68 sweets are shared equally among 9 children. Each child is given a whole number of sweets.
- (i) How many does each child get?
- (ii) How many sweets are left?
- (g) A group of 8 people won £56 on a lottery. How much will they get each if the money is shared equally between them?
- (h) You need to divide a class of 32 children into teams of 8. How many equal teams will you have?
- (i) (i) How many groups of 6 can you get from 92 people?
- (ii) Are there any left over?
- (j) Wine bottles are put in boxes of six. How many boxes will be needed for 84 bottles?
- (k) There are 7 equal sized classes in Year 7. If there are 210 pupils, how many are in each class?

9. Work out:

- |                 |                 |                 |
|-----------------|-----------------|-----------------|
| (a) $27 \div 3$ | (b) $34 \div 2$ | (c) $62 \div 4$ |
| (d) $84 \div 3$ | (e) $72 \div 5$ | (f) $96 \div 4$ |
| (g) $85 \div 5$ | (h) $79 \div 4$ | (i) $86 \div 6$ |
| (j) $97 \div 9$ | (k) $63 \div 7$ | (l) $73 \div 4$ |
| (m) $81 \div 6$ | (n) $94 \div 3$ | (o) $21 \div 5$ |
| (p) $46 \div 7$ | (q) $80 \div 6$ | (r) $90 \div 2$ |
| (s) $78 \div 3$ | (t) $44 \div 5$ | (u) $76 \div 8$ |

## 16.6 Calculations in Context

1. Video tapes cost £2 each. How many can you buy if you have £15 to spend?
2. How many 45-seater buses are needed to transport a school party of 170 pupils and teachers? If it costs £50 to hire each bus, what is the total cost?
3. Garden fencing comes in 5 metre lengths. If you want to fence a total length of 43 metres, how many 5 m lengths do you need?

4. School minibuses can each hold 17 passengers. How many are needed for a school party of 62 people?
5. For a model railway, track comes in two standard lengths, 20 cm and 50 cm.
  - (a) How many of each of the lengths are needed to exactly cover a distance of 180 cm?
  - (b) If each 20 cm length costs £1.50 and each 50 cm length costs £2.50, find the total cost of the track in your answer to (a).
6. CDs cost £12.99. How many can be bought for
  - (a) £50,
  - (b) £100 ?
7. A fighter plane can travel 1200 miles on a full tank of fuel. How many times must it refuel for a journey of 5000 miles?
8. 67 pupils want to play in a 5-a-side football tournament. How many teams can be formed?
9. 11 prizewinners in a lottery are to share equally a total prize of £57 000. If prizes are only given in multiples of £1000, how much does each prizewinner receive?
10. How many 49-seater coaches are needed for a party of 225 people? If it costs £50 to hire each coach, what is the total cost?

39-seater coaches are also available, costing £35 each. What now is the cheapest option?

# 17 Perimeters and Areas

## 17.1 Perimeters

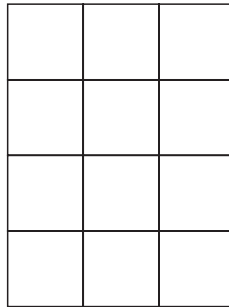
*In this section, all the small squares are 1 cm squares.*

1. Find the perimeters of each of the following shapes.

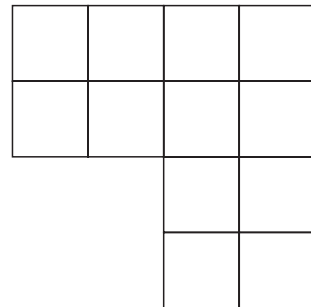
(a)



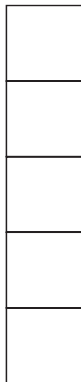
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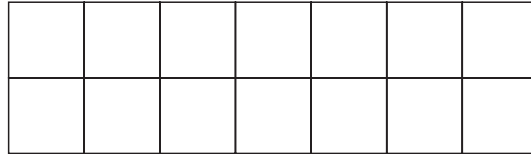
(c)



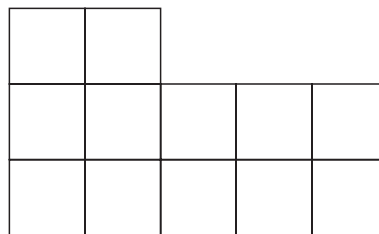
(d)



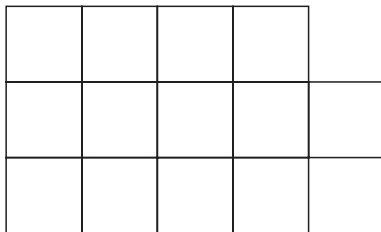
(e)



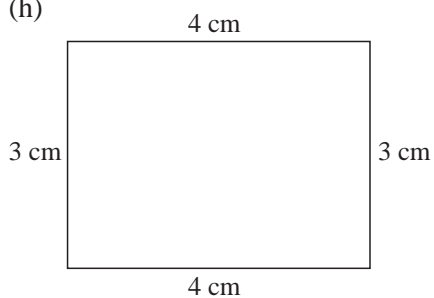
(f)



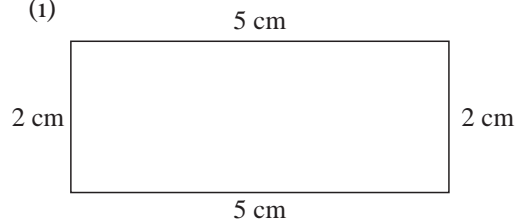
(g)



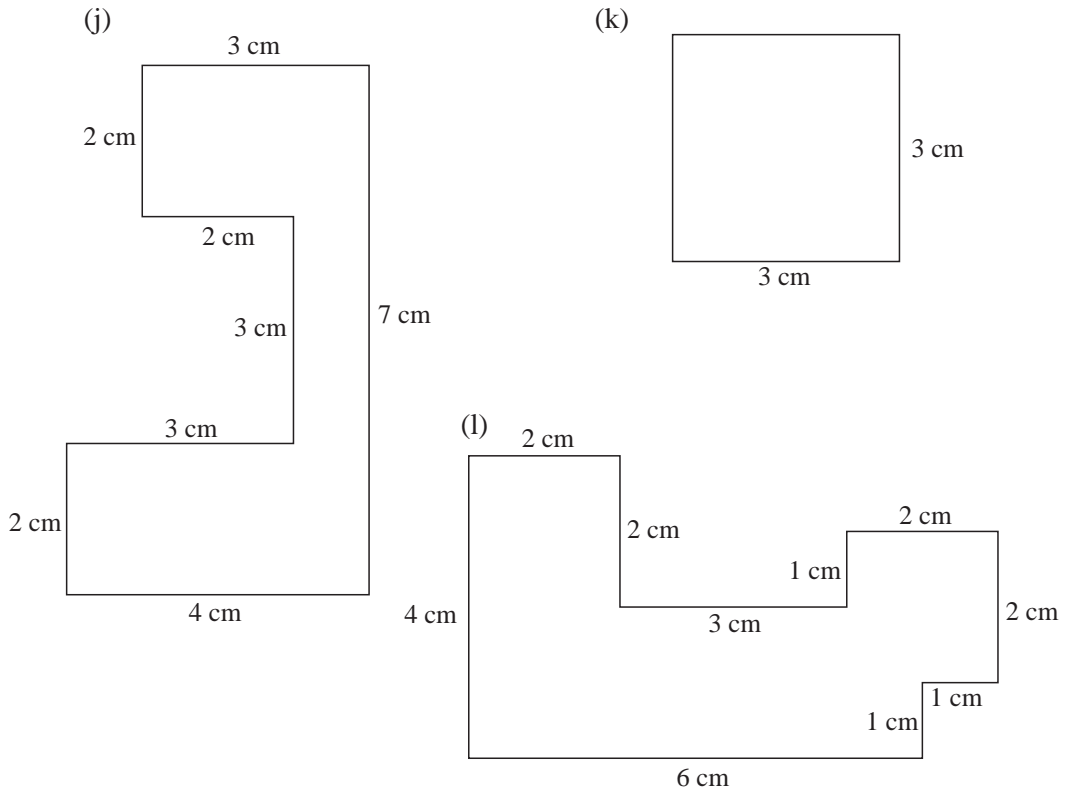
(h)



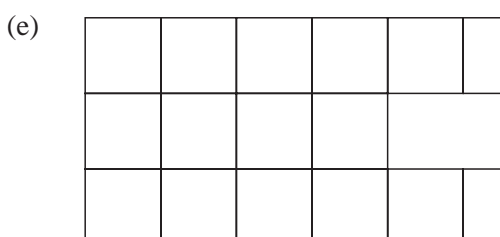
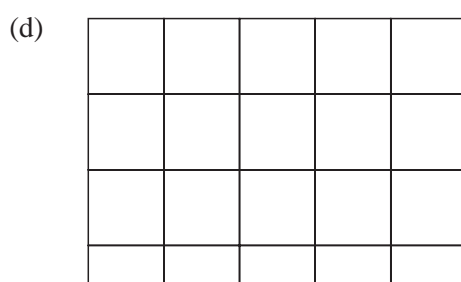
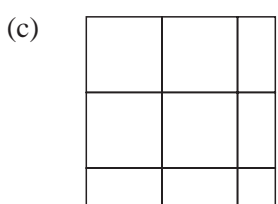
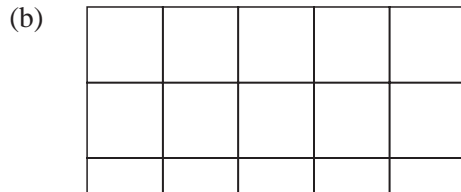
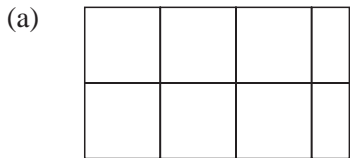
(i)



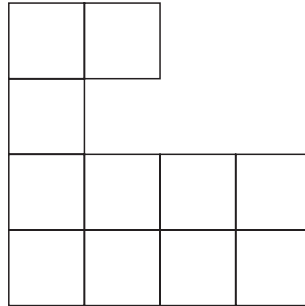
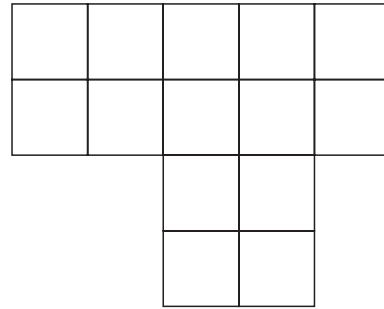
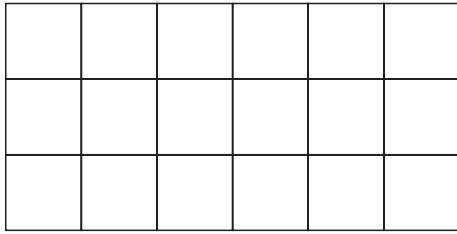
In questions (j), (k) and (l), all angles are right angles.



2. Find the perimeter of each of the following shapes. Take care with the half squares!

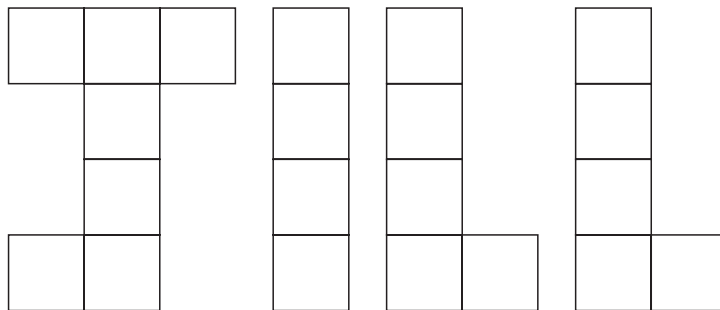


3. Each of the following shapes has a perimeter of 18 centimetres.



Using 1 cm squares like those above, draw SIX more different shapes which each have a perimeter of 18 cm.

4. Jill wrote her name in centimetre squares.

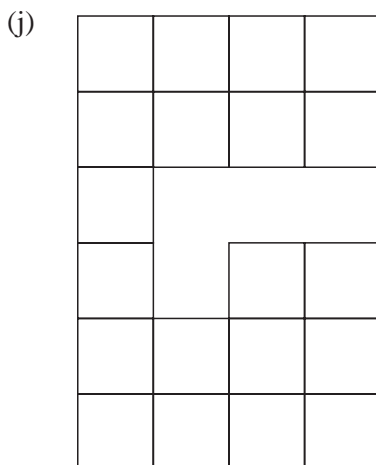
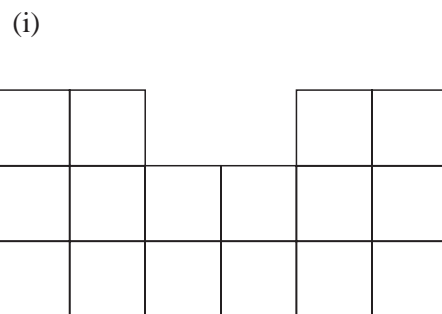
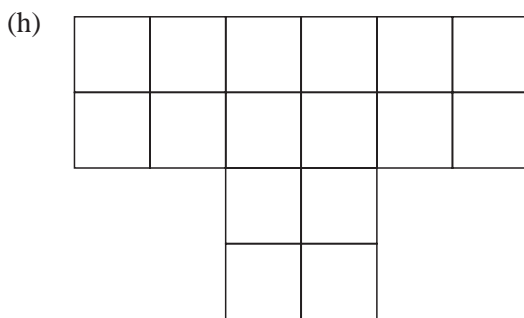
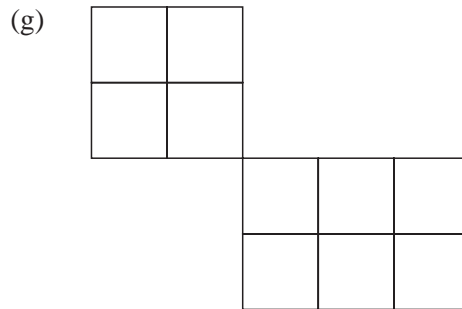
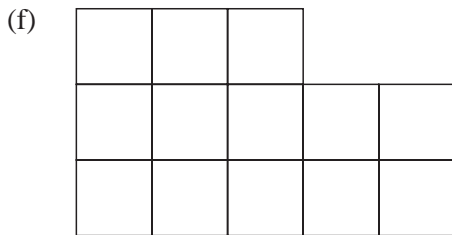
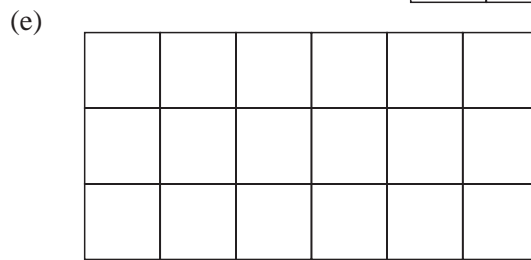
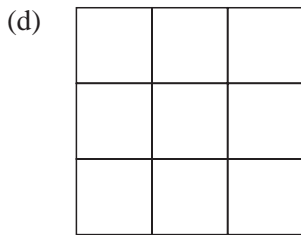
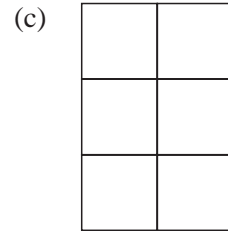
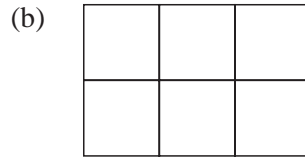


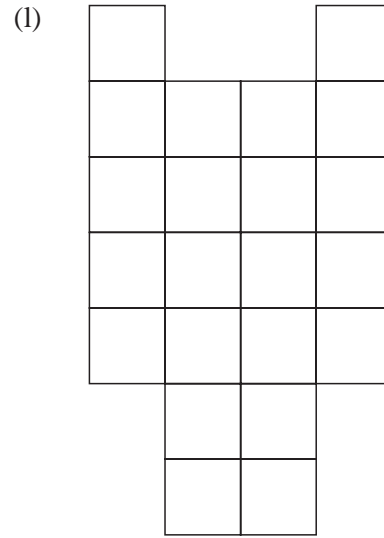
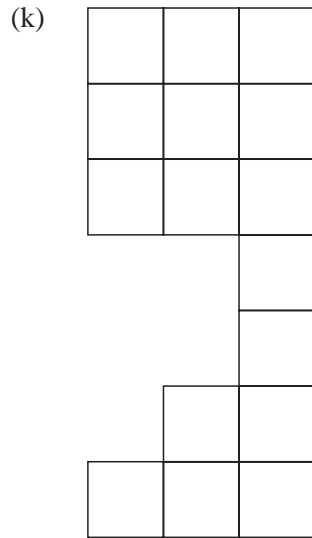
- What is the perimeter of each letter in Jill's name?
- What is the total perimeter for Jill's name?
- Draw *your* name in centimetre squares. Repeat questions 4(a) and 4(b) using the letters of your name.

# 17.2 Areas (counting squares)

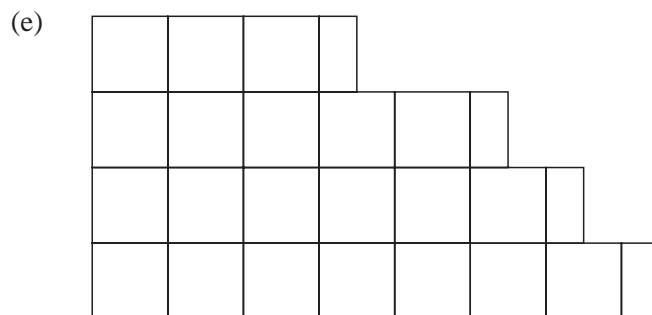
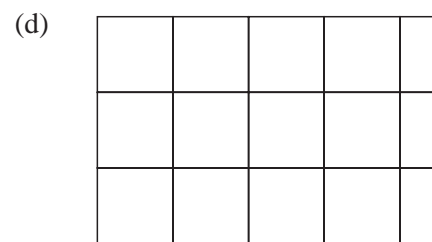
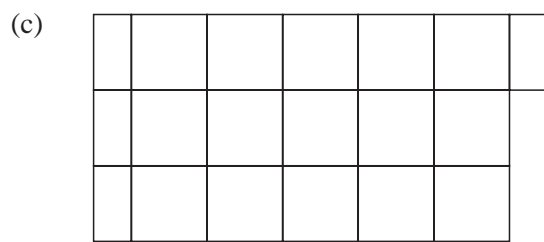
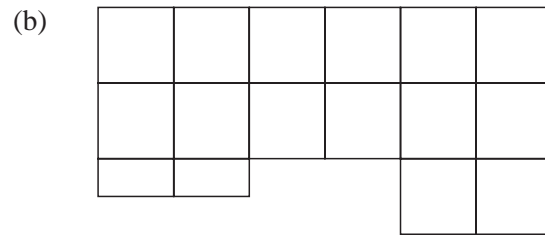
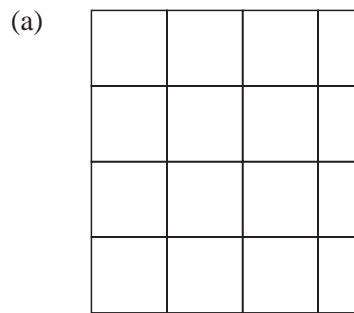
*In this section, all the small squares are 1 cm squares.*

1. Find the area of each of the following shapes:

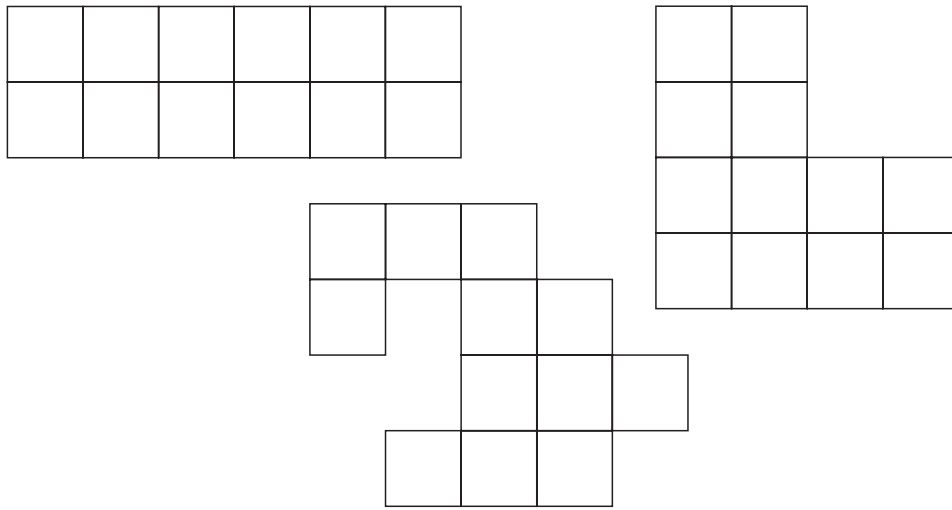




2. Find the area of each of the following shapes. Take care with the half squares!

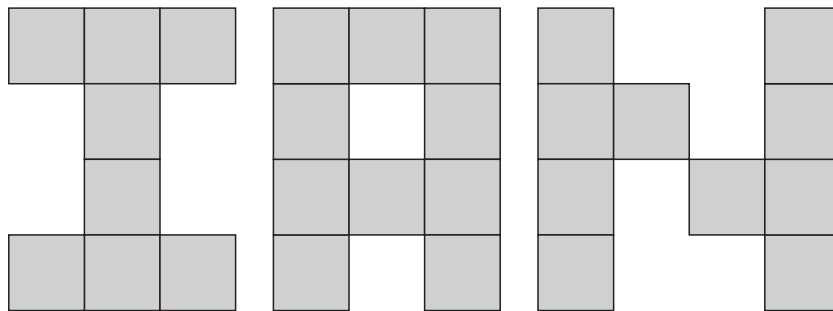


3. Each of the following shapes has an area of 12 centimetre squares; this can be written as  $12 \text{ cm}^2$ .



Draw SIX more shapes that each have an area of  $12 \text{ cm}^2$ .

4. Ian wrote his name in centimetre squares.



- (a) How many centimetre squares does Ian's name use?  
 (b) Draw out *your* name in centimetre squares. How many squares does your name use?

# 18 Time

## 18.1 12- and 24-hour Clock

Times between midnight (2400 hours) and midday (1200 hours) are known as am. So morning times are am.

Times between midday and midnight are known as pm. So afternoon and evening times are pm.

1. How long is it between these times?

- |                          |                           |
|--------------------------|---------------------------|
| (a) 7.15 am and 7.45 am  | (b) 9.20 pm and 10.10 pm  |
| (c) 5.05 am and 6.35 am  | (d) 8.10 am and 10.50 pm  |
| (e) 9.27 am and 9.58 pm  | (f) 10.37 pm and 11.05 pm |
| (g) 6.14 pm and 3.35 am  | (h) 8.32 am and 9.15 am   |
| (i) 11.35 am and 1.20 pm | (j) 11.49 pm and 12.37 am |

### Example

24 hours are marked on this clock.

If we use the 24-hour clock instead of the 12-hour clock, it is clear which time we mean. For example, the time shown here is either 3.00 am or 3.00 pm.

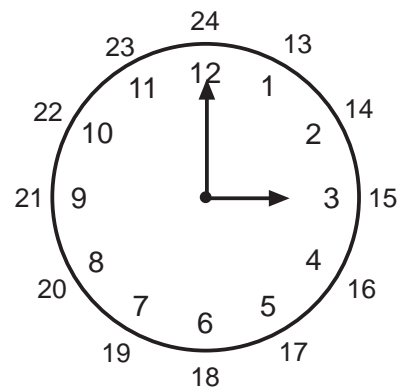
If we write 0300 for 3.00 am and 1500 for 3.00 pm, it is quite obvious which time we mean.

In the same way,

4.30 am is 0430,

and

4.30 pm is 1630.



2. Write these times as 24-hour clock times.

- |             |             |             |             |
|-------------|-------------|-------------|-------------|
| (a) 5.20 pm | (b) 8.30 am | (c) 6.16 pm | (d) 9.45 am |
| (e) 7.15 am | (f) 7.15 pm | (g) 9.25 am | (h) 4.40 pm |

3. Write these 24-hour clock times as am or pm times.

- |          |          |          |          |
|----------|----------|----------|----------|
| (a) 1640 | (b) 0735 | (c) 1955 | (d) 1730 |
| (e) 0715 | (f) 1132 | (g) 1445 | (h) 1047 |

4. A digital watch is showing 13:45.  
What time will it be showing in
- (a) 10 minutes                      (b) 25 minutes                      (c) 1 hour
- (d) 2 hrs 10 mins                      (e) 3.5 hours?

## 18.2 Times and Timetables

Sometimes when it is obvious whether we mean morning or afternoon, the am and pm are not used. For example, if you say that school starts at 9.00 and finishes at 3.30, it is assumed that it starts in the morning (am) and finishes in the afternoon (pm). Common sense has to be used!

1. A film on television begins at 8.15 and ends at 10.20. How long does the film last?
2. A bus leaves at 7.05 and arrives at 7.45. How long does the journey take?
3. A cake takes 20 minutes to cook. Asif puts a cake in the oven at 12.25. At what time will the cake be ready?
4. A train journey takes 35 minutes. The train leaves at 9.50. At what time will the train arrive at its destination?
5.
  - (a) Write down the time at which school starts.
  - (b) Write down the time at which school finishes.
  - (c) How long is your school day, in hours and minutes?
6. Jim starts work at 8.30 am and finishes at 4.45 pm. He has a one hour lunch break. How many hours does Jim work in a day?
7. A bus should arrive at 3.55 but it is 12 minutes late. At what time does it arrive?
8. A television programme begins at 6.45 and ends at 8.10.
  - (a) How long, in hours and minutes, does the programme last?
  - (b) Ann records the programme in a 180 minute video tape. How much time, in hours and minutes, is left on the tape?
9. A film starts at 8.25 and ends at 10.05. How long does the film last?
10. It takes  $1\frac{1}{2}$  hours for a chicken to cook. At what time should Jane put the chicken in the oven for it to be ready for lunch at 1.15 pm?

11. Here are ten different times and ten different activities. Match each time to an activity.

10.00 pm	7.30 pm	12.30 pm	3.00 pm	9.00 am
11.15 pm	5.30 pm	12.00 am	3.30 pm	6.00 am

Lunchtime	Kick-off time for Manchester United next Saturday	Midnight
Closing time at chemist shop today	Start time for the Horror film on BBC1	End of school
Start of school	Start of News at Ten	Start of Coronation Street on ITV
Time the milk is delivered in your street		

12. Here is an extract from the TV Guide for one Saturday evening on BBC1.

- (a) How long does the film last?
- (b) Mary sets her video recorder to record a programme at 2005 hours. What programme is she recording?
- (c) *They Think It's All Over* lasts for 30 minutes. At what time will it finish?
- (d) Ian watches *Noel's House Party*, *Independence Day* and *Match of the Day*. For how long does he watch TV this evening?

7.00	Noel's House Party
7.50	National Lottery Live
8.05	Casualty
8.55	News and Sport
9.10	Film: Independence Day
11.15	Match of the Day
12.20	They Think It's All Over

13. The following times are written using the 12-hour clock. Rewrite them using the 24-hour clock.

- |             |             |              |              |
|-------------|-------------|--------------|--------------|
| (a) 5.30 pm | (b) 8.30 am | (c) 10.25 am | (d) 11.35 pm |
| (e) 4.10 am | (f) 8.45 pm | (g) 6.15 pm  | (h) 1.30 pm  |

14.

7.30	Coronation Street
8.00	Wheel of Fortune
8.30	The Bill
9.00	Film: Alaska (split by the News)
10.00	News and Sport
10.40	Film: Alaska (continued)
11.55	Champions League Highlights

Here is an extract from the TV Guide for one Wednesday evening on ITV.

- (a) How long does the film last?  
 (b) Rewrite the TV Guide using 24-hour times.

15. Part of the Plymouth to London train timetable is given below.

Plymouth	d	–	0555	0700	0735
Exeter	d	0600	0657	0755	0837
Taunton	d	0627	0724	0817	0904
Reading	d	0803	0856	↓	1039
London	a	0835	0925	0955	1110

- (a) If you arrive at Plymouth at 0634, what is the earliest time you could be at  
 (i) London                      (ii) Reading?
- (b) If you want to arrive in London before 0900, what time train must you catch from Exeter?
- (c) If you arrive at Taunton at 0900 hours, what time should you reach Reading?

# 19 Number Concepts 5

## 19.1 Money Problems

1. (a)  $£3.27 + £2.41$  (b)  $£2.54 + £6.87$   
 (c)  $£10.27 - £4.13$  (d)  $£5.24 - £3.47$   
 (e)  $£1.76 + £4.72 + 29p$  (f)  $£4.37 - £2.94 - 57p$

For each of the following, write a calculation and then work out the answer.

2. I buy a shirt for  $£7.96$  and a tie for  $£4.51$ . How much do I pay in total?
3. My gas bill is  $£34.06$ . My electricity bill is  $£49.22$ . What is the total of both these bills?
4. I go out for the evening and buy the following:

<i>a cinema ticket</i>	$£3.40$
<i>a drink</i>	$£1.38$
<i>a box of popcorn</i>	$£1.23$
<i>a bus ticket</i>	$£0.90$

How much do I spend?

5. I have  $£24.36$  in my wallet. If I spend  $£17.24$  on a book, how much do I have left?
6. I spend  $£11.42$  and give the cashier a  $£20$  note. How much change do I get?
7. Find the total cost of 3 CDs at  $£7.50$  each and 4 tapes at  $£4.50$  each.
8. Calculate the total cost of the following bill:
- |  |
|--|
| <i>3 pizzas at <math>£2.30</math> each</i>     |
| <i>2 ice creams at <math>£1.35</math> each</i> |
| <i>3 coffees at <math>£1.00</math> each</i>    |
9. If apples cost 25p each and oranges cost 35p each, what is the total cost in  $£$  of 7 apples and 5 oranges?
10. Three cars, each of length 4.24 metres, and two minibuses, each of length 5.45 m, are loaded onto a shuttle wagon for transporting through the Channel Tunnel.
- (a) What is the total length of these five vehicles?
- (b) If the shuttle wagon has a total length of 24 m, will they all fit in?

11. Five tickets for a football match cost £42.50 in total.  
What is the cost of each ticket?
12. Six tickets to a concert cost £76.50.  
What is the cost of a single ticket?
13. Adult tickets for a football match cost £14.50 each and junior tickets cost £5.50 each. What is the total cost for a party of 5 adults and 3 children?
14. Copy and complete the following bill:

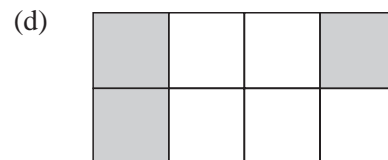
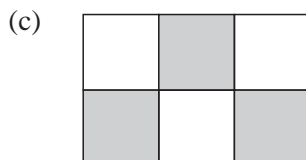
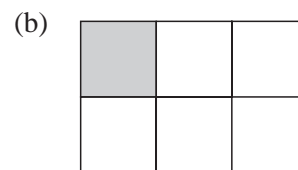
2 videos at £10.00 each	£	
5 tapes at £6.99 each	£	
Total	£	

15. Copy and complete the following bill:

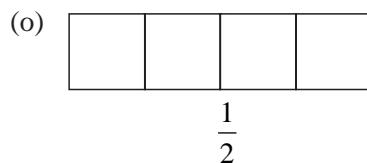
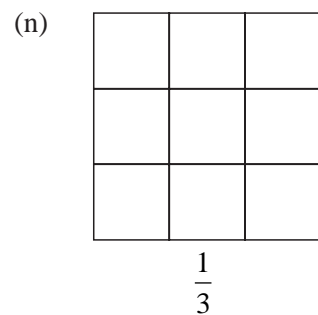
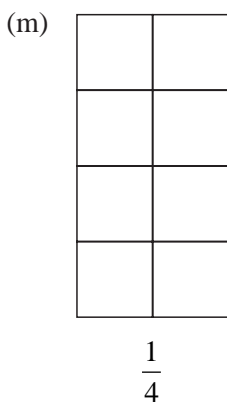
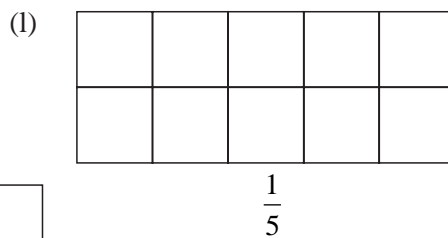
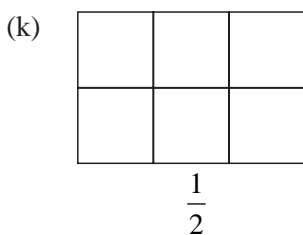
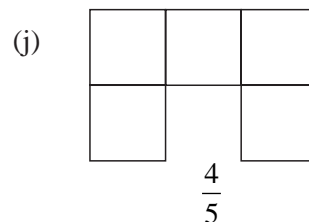
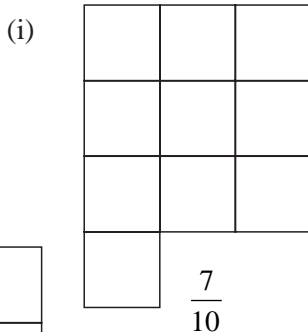
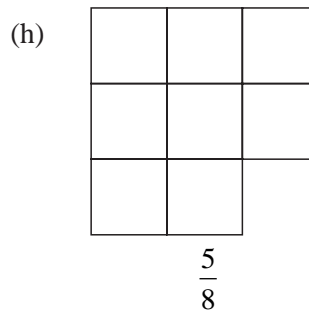
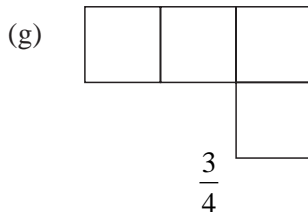
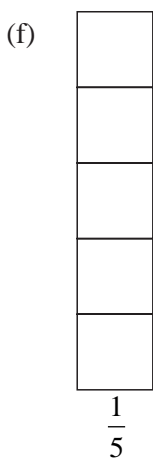
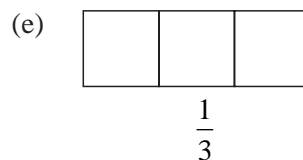
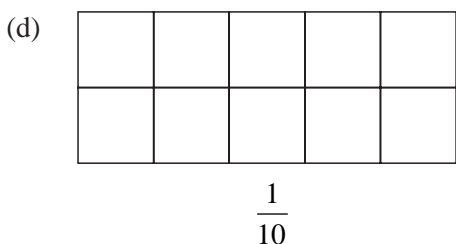
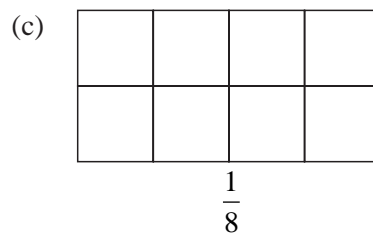
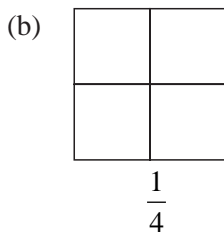
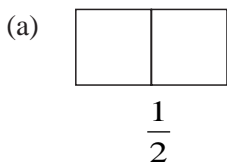
5 fish at £1.35 each	£	
4 portions chips at £0.75 per portion	£	
3 servings peas at £0.55 per serving	£	
4 cans drink at £0.42 per can	£	
Total	£	

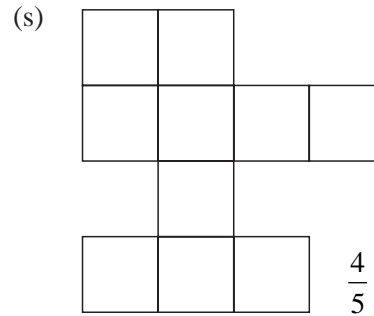
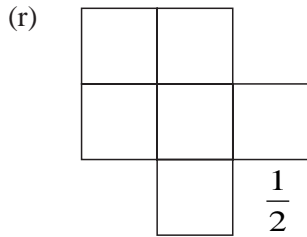
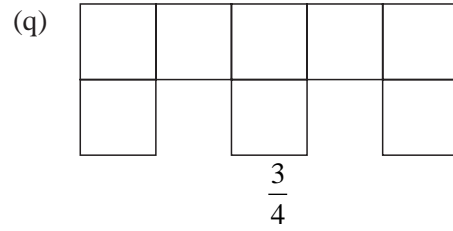
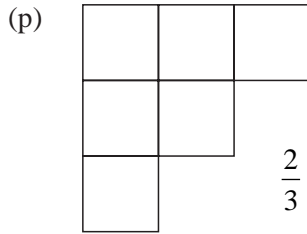
## 19.2 Calculations with Fractions

1. What fraction of the whole shape is the shaded fraction in each of the following diagrams?



2. Copy the diagrams below and shade the given fraction.





**Example** Find  $\frac{1}{4}$  of 12.

**Solution**  $\frac{1}{4}$  of 12 =  $12 \div 4 = 3$

**Example** Find  $\frac{3}{5}$  of 30.

**Solution**  $\frac{1}{5}$  of 30 =  $30 \div 5 = 6$

$\frac{3}{5}$  of 30 =  $6 \times 3 = 18$

3. (a)  $\frac{1}{2}$  of 18      (b)  $\frac{1}{4}$  of 20      (c)  $\frac{1}{10}$  of 90
- (d)  $\frac{1}{5}$  of 35      (e)  $\frac{1}{2}$  of 13      (f)  $\frac{3}{4}$  of 36
- (g)  $\frac{4}{5}$  of 25      (h)  $\frac{3}{10}$  of 100      (i)  $\frac{2}{5}$  of 60
- (j)  $\frac{9}{10}$  of 200

# 19.3 Percentages

Note that:

$$\frac{1}{4} = 25\%$$

$$\frac{1}{10} = 10\%$$

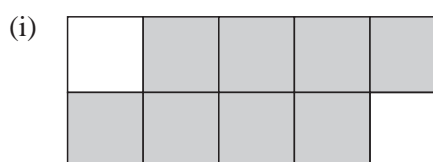
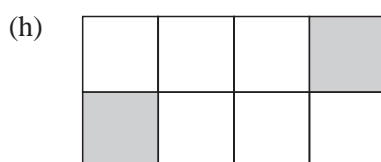
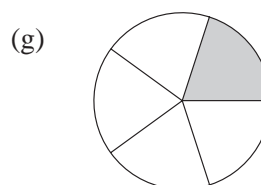
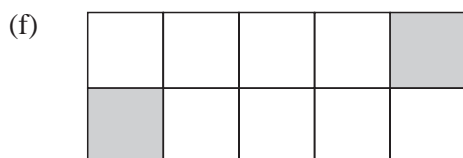
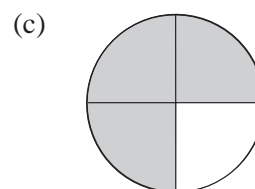
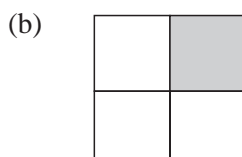
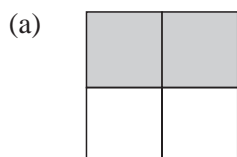
$$\frac{1}{2} = 50\%$$

$$\frac{1}{5} = 20\%$$

$$\frac{3}{4} = 75\%$$

1. For each of the shapes below,

- (i) what percentage is shaded,  
 (ii) what percentage is *not* shaded?



2. Express each of the following fractions as a percentage.

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

(b)  $\frac{3}{4}$

(c)  $\frac{1}{5}$

(d)  $\frac{1}{4}$

(e)  $\frac{2}{4}$

(f)  $\frac{1}{10}$

(g)  $\frac{8}{10}$

(h)  $\frac{2}{10}$

(i)  $\frac{3}{5}$

(j)  $\frac{6}{10}$

(k)  $\frac{4}{5}$

(l)  $\frac{9}{10}$

**Example**

Find 20% of £200.

**Solution**

20% means the fraction  $\frac{20}{100}$  or  $\frac{1}{5}$ ; that is,  $\frac{1}{5}$  of £200 =  $\frac{£200}{5}$  = £40.

**Example**

Find 75% of 40 km.

**Solution**

75% of 40 km =  $\frac{3}{4}$  of 40 km

$\frac{1}{4}$  of 40 km =  $40 \text{ km} \div 4 = 10 \text{ km}$

$\frac{3}{4}$  of 40 km =  $3 \times 10 \text{ km} = 30 \text{ km}$

3. Find the following percentages of 400 m.

- |         |         |         |         |
|---------|---------|---------|---------|
| (a) 10% | (b) 20% | (c) 25% | (d) 50% |
| (e) 75% | (f) 80% | (g) 90% | (h) 40% |

4. Find

- |                   |                  |                  |
|-------------------|------------------|------------------|
| (a) 50% of 20 kg  | (b) 25% of 40 m  | (c) 10% of £50   |
| (d) 20% of 100 g  | (e) 75% of £400  | (f) 25% of 200 m |
| (g) 90% of £200   | (h) 50% of 450 g | (i) 80% of 50 m  |
| (j) 25% of 200 kg | (k) 75% of 80 m  | (l) 20% of 500 g |
| (m) 25% of £160   | (n) 150% of £200 | (o) 125% of 60 m |

5. John took his family out for a meal.

The bill came to £30.

He gave the waiter a 10% tip.

- How much was the tip?
- How much did John pay altogether?
- John paid with two £20 notes. How much change did he get?

6. Coffee is sold in 100 g jars.  
A special offer says '20% more coffee'.  
How much coffee is there in a 'special offer' jar?
7. In a sale, everything was reduced by 25%.  
The original price of a coat was £48.  
(a) By how much was the coat reduced?  
(b) What was the sale price of the coat?
8. Alia bought a car for £4000.  
Three years later its value had decreased by 30%.  
(a) By what amount had the value of the car decreased?  
(b) What was the car worth after 3 years?
9. Karen bought an antique vase for £120.  
Two years later its value had gone up by 25%.  
(a) By how much did the value of the vase go up?  
(b) What was the vase worth after two years?
10. Chen earns £30 a week from his part-time job. He is given a 20% pay rise.  
(a) How much more money does he get each week?  
(b) What is his new weekly wage?
11. A new born baby weighed 5 kg.  
In the first three months his weight increased by 60%.  
(a) By how much did the baby's weight increase?  
(b) What was the baby's weight after three months?

## 19.4 Quantities as Percentages

### Example

10 out of 25 can be written as  $\frac{10}{25}$ .

$$\frac{10}{25} \xrightarrow{\times 4} \frac{40}{100} = 40\%$$

- Write each of the following as percentages.
 

(a) 42 out of 100	(b) 8 out of 50	(c) 3 out of 25
(d) 8 out of 10	(e) 14 out of 20	(f) 47 out of 25
(g) 3 out of 20	(h) 9 out of 10	(i) 16 out of 25
(j) 10 out of 40	(k) 150 out of 200	(l) 200 out of 1000
- In a school of 100 pupils, 40 are girls.
  - What percentage are girls?
  - What percentage are boys?
- In a class of 25 pupils, 16 are girls.
  - What percentage are girls?
  - What percentage are boys?
- A coach is carrying a party of 50 people. At the first stop, 10 people get off.
  - What percentage of people get off the coach at the first stop?
  - What percentage of people *do not* get off the coach at the first stop?

A further 15 people get off the coach at the next stop. What percentage of the original party of people is still on the coach?
- In a survey of 400 people. 300 said they regularly watched *Coronation Street*.
  - What percentage regularly watched *Coronation Street*?
  - What percentage did not regularly watch *Coronation Street*?
- There are 300 pupils in a school.  
There are 42 pupils in Year 6.  
What percentage of pupils are in Year 6?

7. Adrian orders 500 bricks.  
When the bricks arrive, 20 are broken.
  - (a) What percentage of the bricks are broken?
  - (b) What percentage are not broken?
  
8. Angela scores 14 out of 20 in a test.  
What percentage does she get?
  
9. There were 50 passengers on a bus. 38 of the passengers were adults.
  - (a) What percentage of the passengers were adults?
  - (b) What percentage of the passengers were children?
  
10. There were 30 000 supporters at a football match. 18 000 supported Rovers.  
The rest supported United.
  - (a) What percentage supported Rovers?
  - (b) What percentage supported United?

# 20 Data Analysis 3

## 20.1 Sorting and Classifying Data

1. Put these numbers into the correct boxes in the table below:

15, 24, 7, 12, 25, 60, 4, 21

	<i>More than 20</i>	<i>Less than 20</i>
<i>Odd</i>		
<i>Even</i>		

2. Put these numbers into the correct boxes in the table below:

5, 1, 172, 26, 72, 13, 6, 221, 150, 4, 99

	<i>Odd</i>	<i>Even</i>
<i>One digit</i>		
<i>Two digits</i>		
<i>Three digits</i>		

3. Put these numbers into the correct boxes in the table below:

0.2, 7.12, 6.5, 12.2, 15.11, 5.76, 10.75

	<i>More than 10</i>	<i>Less than 10</i>
<i>One decimal place</i>		
<i>Two decimal places</i>		

4. Put these numbers into the correct boxes in the table below:

19, 1, 4, 9, 22, 45, 25, 13, 49, 34

	<i>Even</i>	<i>Odd</i>
<i>2 is a factor</i>		
<i>3 is a factor</i>		
<i>5 is a factor</i>		
<i>7 is a factor</i>		
<i>none of 2, 3, 5 and 7 are factors</i>		

5. Put these numbers in the correct boxes in the table below:

-5, 12, 7, -7, 6, -11, -6, 13, -16, -4, 21

	<i>Odd</i>	<i>Even</i>
<i>Positive</i>		
<i>Negative</i>		

## 20.2 Pictograms

1. Pupils were asked how much homework they did on average each night. Their replies are given below.

Ben	60 minutes
Sarah	30 minutes
Morag	40 minutes
Peter	40 minutes
Jay	50 minutes
Marcus	100 minutes

Using the key 

	= 20 minutes
--	--------------


 copy and complete the following diagram:

Ben	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Sarah	<input type="checkbox"/> <input type="checkbox"/>
Morag	
Peter	
Jay	
Marcus	



2. The list below shows the number of cars parked in the school car park each day in one week.

<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>
16	24	20	32	12

Using the key 

	= 8 cars
--	----------


, copy and complete the diagram below.

Monday	 
Tuesday	
Wednesday	
Thursday	
Friday	


3. The numbers of goals scored by some football teams during the 1996/97 season are shown below.

Aston Villa	52
Everton	64
Leeds	40
Southampton	34
Blackburn	61

Using the key 


	= 4 goals
---	-----------



, copy and complete the following diagram to illustrate these data.

Aston Villa	
Everton	
Leeds	
Southampton	
Blackburn	

4. The total number of passengers carried on a ferry ship each day during one week in August is shown in the table below.

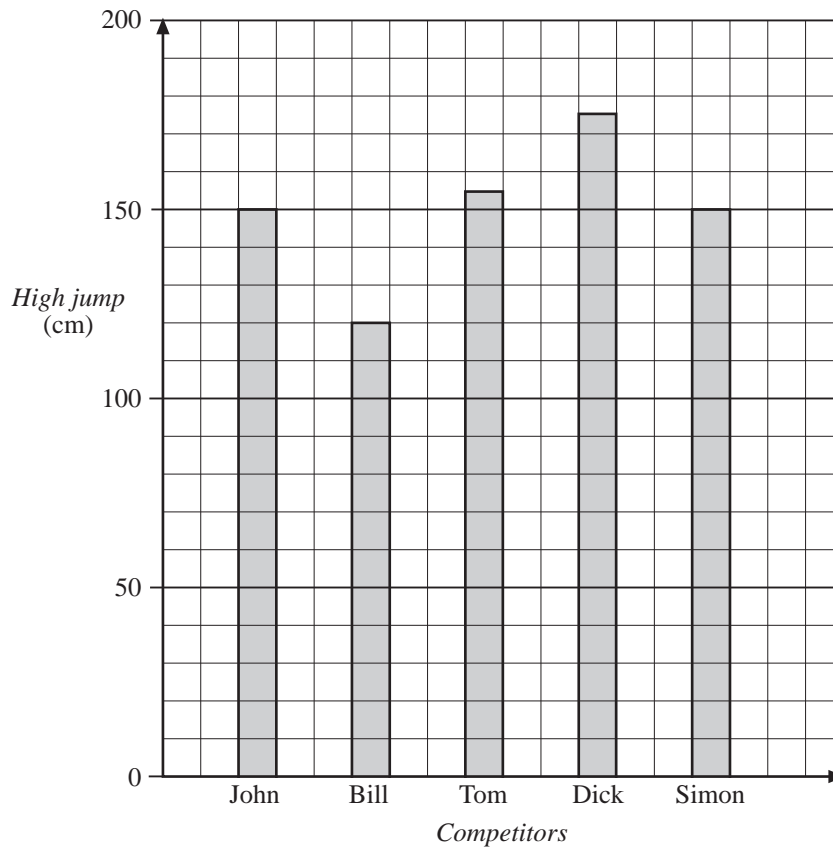
<i>Sunday</i>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
160	180	120	100	80	220	180

Using the key  = 40 passengers, copy and complete the diagram below.

Sunday	
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	

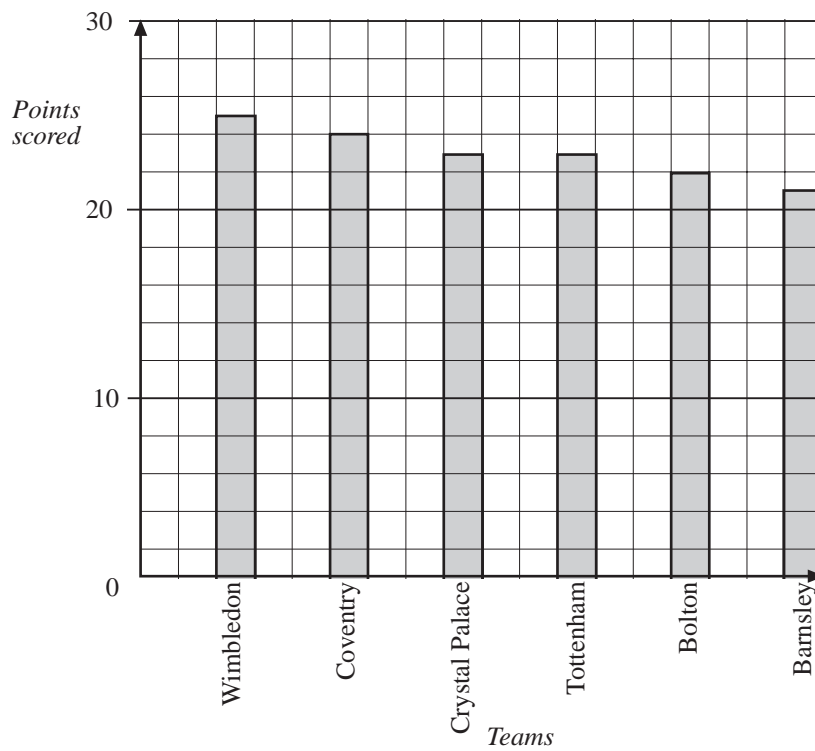
## 20.3 Line Diagrams

1. The high jump data for a school is shown in the diagram below.



- (a) Who won the competition, and what was the height of their jump?
- (b) Where did Tom come in the competition?
- (c) Which two competitors finished the competition with jumps of the same height?
- (d) How much higher did the winner jump than the competitor who came second?

2. The diagram shows the number of points scored by the bottom six football teams, halfway through the season.

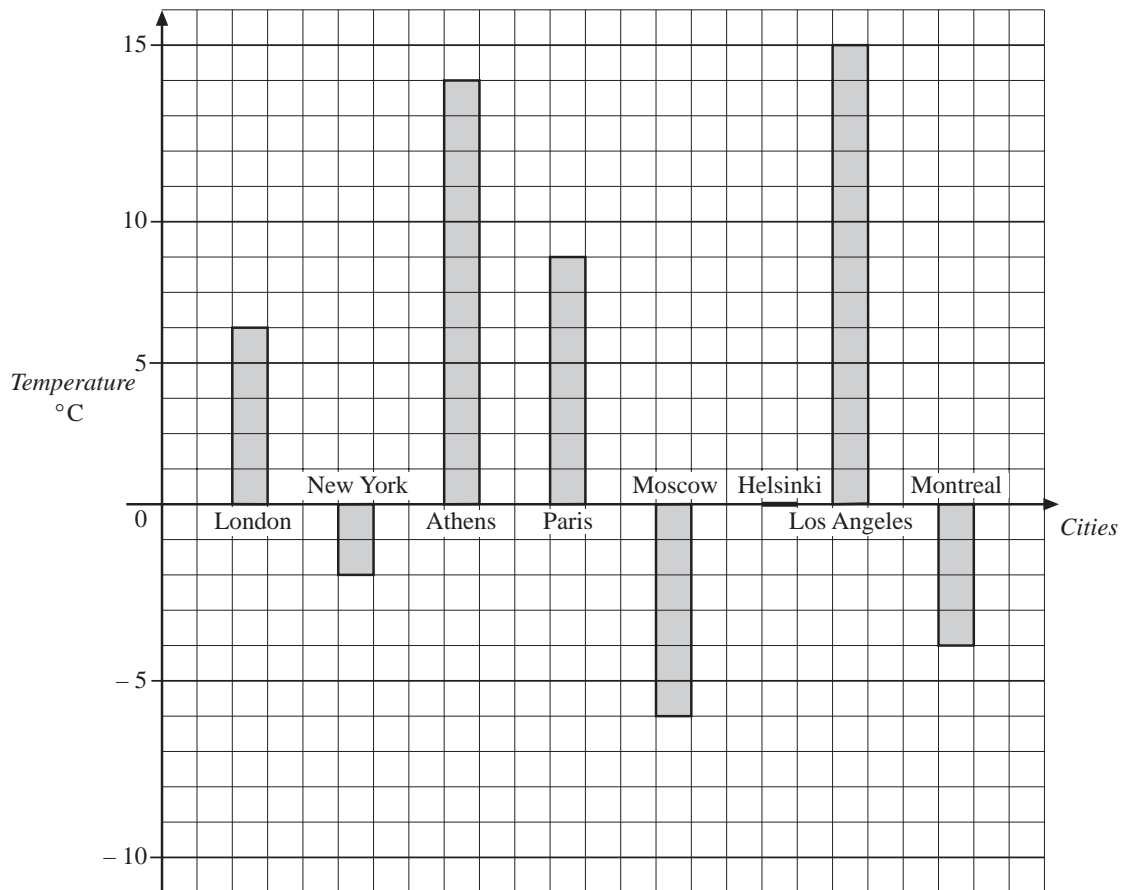


- (a) What is the difference in points between the highest and the lowest of these teams?
- (b) Which two teams have scored an equal number of points?
- (c) Which team is two points ahead of Bolton?

3. The average temperature at a number of cities in January 1997, is shown on the diagram.

Use the information in the diagram to answer the following questions.

- (a) Which of these cities was the (i) warmest, (ii) coldest?
- (b) What was the difference in temperature between the warmest and the coldest cities?
- (c) Which city was  $4^{\circ}\text{C}$  warmer than Moscow?
- (d) Which city was  $2^{\circ}\text{C}$  colder than Paris?
- (e) What was the difference in temperatures between Athens and Montreal?
- (f) The average temperature for Singapore is  $30^{\circ}\text{C}$ . How much warmer was this than
  - (i) Helsinki, (ii) London, (iii) Moscow?



# 21 Probability

## 21.1 Outcomes

- A fair dice is thrown.
  - List all the possible outcomes.
  - Are all the outcomes equally likely?
- A 2p piece and a 10p piece are tossed.  
Copy and complete the table to show all the possible outcomes.

2p	10p
H	H

- A coin is tossed and a dice is thrown.  
List all the possible outcomes.
- For breakfast, Rachel will drink either fruit juice (F), milk (M) or coffee (C).  
She will eat toast (T) or Rice Crunchies (R).  
Copy and complete Rachel's choice of breakfasts.  
F T, F R, . . . .
- Mr Brown needs to pick two players from Adam, Ben, Carl and Derek for a table tennis match. Write down the possible choices he can make.
- Three flavours of ice cream, vanilla (V), mint (M) and strawberry (S) are sold in a shop. Each is served with raspberry (R) or chocolate (C) sauce. Ralph asks for a vanilla ice cream with chocolate sauce (VC).  
Write down all the other possibilities he could choose.
- There are three runners in a race,  
David (D), Nigel (N) and Frank (F)  
D N F means  
David *first*, Nigel *second*, Frank *third*  
List all the possible outcomes.

8. Two dice are thrown, and the total of the scores shown on the two dice is noted. What is

- (a) the largest possible score,
- (b) the smallest possible score?

Are all scores between your answers to (a) and (b) equally likely to occur?

9. Three dice are thrown, and the total of the scores shown is noted. What is

- (a) the largest possible score,
- (b) the smallest possible score?

## 21.2 Estimating the Likelihood of Events

1. Say whether each of the following events is *certain*, *likely*, *unlikely* or *impossible*.

- (a) You will win a million pounds in a lottery.
- (b) There will be 30 days in June next year.
- (c) You will get a 7 when you throw a normal dice.
- (d) Your favourite football team will win its next match.
- (e) You will have chips with your next school dinner.
- (f) The amount of your pocket money will be doubled next week.
- (g) It will snow in London in July.
- (h) A person chosen at random from your class will be right handed.
- (i) You will pass your car driving test before you are 17.
- (j) You will have a birthday during the next year.

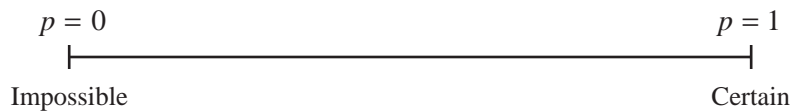
2. Say whether there is a *good* chance, an *even* chance or a *poor* chance for each of the following events.

- (a) The next baby to be born in your local hospital will be a boy.
- (b) If you roll a dice you will get a number bigger than 1.
- (c) If you buy a raffle ticket you will win first prize.
- (d) The driver of the next lorry you see will be a man.
- (e) If you pick a playing card at random from a pack, it will be red.
- (f) A person chosen at random from your class will be 15 years old.
- (g) You will live to be 100.
- (h) If you spin a coin you will get heads.

- (i) You will have at least one maths lesson next week.
- (j) You will watch television sometime today.

## 21.3 Estimating Probabilities

For each of the questions, draw a probability line like the one below.



Show with an arrow where you think the probability of each of the following events is positioned.

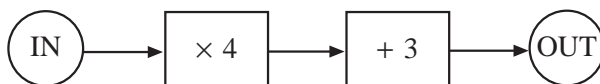
- (1) Probability that a fair coin lands HEAD when tossed.
- (2) Probability that a fair dice shows SIX when thrown.
- (3) Probability that EXETER City will win the FA Cup football competition next year.
- (4) Probability that ENGLAND will win the next WORLD CUP football competition.
- (5) Probability that there will be snow on your school roof tomorrow.
- (6) Probability that you will live to be 100.
- (7) Probability that you will be a millionaire one day.
- (8) Probability that you will get married.
- (9) Probability that you will go to school tomorrow.
- (10) Probability that you will win a lottery prize.

# 22 Number Machines 2

## 22.1 Two Function Machines

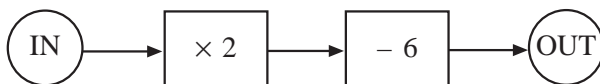
1. For each of the number machines below, copy and complete the input / output table.

(a)



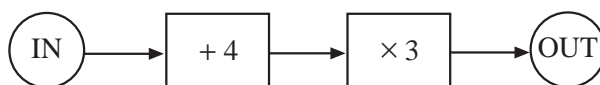
<i>Number in</i>	<i>Number out</i>
2	?
3	?
?	19
?	27

(b)



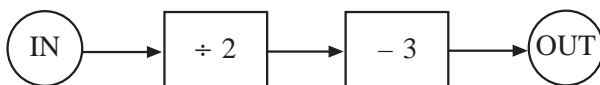
<i>Number in</i>	<i>Number out</i>
3	?
5	?
?	8
?	12

(c)

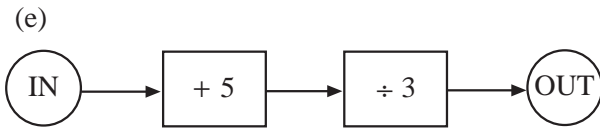


<i>Number in</i>	<i>Number out</i>
3	?
4	?
?	18
?	30

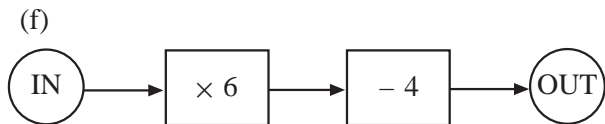
(d)



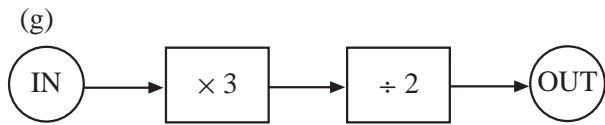
<i>Number in</i>	<i>Number out</i>
8	?
12	?
?	2
?	5



<i>Number in</i>	<i>Number out</i>
4	?
7	?
?	9
?	15

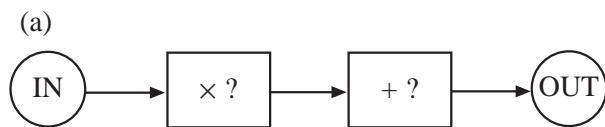


<i>Number in</i>	<i>Number out</i>
2	?
2.5	?
1.5	?
?	14

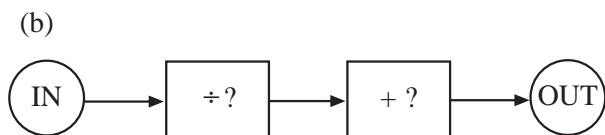


<i>Number in</i>	<i>Number out</i>
4	?
5	?
?	9
?	15

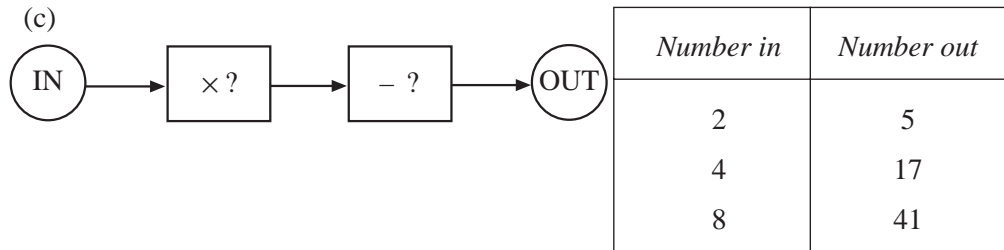
2. Find a number machine which gives the input / output.



<i>Number in</i>	<i>Number out</i>
1	7
3	11
6	17
10	25



<i>Number in</i>	<i>Number out</i>
3	5
6	6
12	8
30	14



# 23 Number Patterns

## 23.1 Finding the Pattern

- For each of these sets of numbers, write down the next two numbers. For each set, write down the rule that you have used.
  - 2, 4, 6, 8, ....., .....
  - 3, 6, 9, 12, ....., .....
  - 7, 9, 11, 13, 15, ....., .....
  - 20, 16, 12, ....., .....
  - 77, 70, 63, 56, ....., .....
  - 41, 36, 31, ....., .....
  - 1, 2, 4, 8, ....., .....
  - 3, 6, 12, 24, ....., .....
  - 1, 3, 9, 27, ....., .....
  - 112, 113, 114, ....., .....
  - 400, 200, 100, ....., .....
  - 160, 80, 40, ....., .....
  - 810, 270, 90, ....., .....
- Work out the rule for each of the patterns below. For each pattern, write down the rule and the next two numbers.
  - 1, 3, 6, 10, ....., .....
  - 1, 4, 9, 16, ....., .....
  - 1, 3, 7, 13, 21, ....., .....
  - 100, 90, 81, 73, 66, ....., .....
  - 2, 10, 18, 26, 34, ....., .....
  - 5, 7, 10, 14, 19, ....., .....

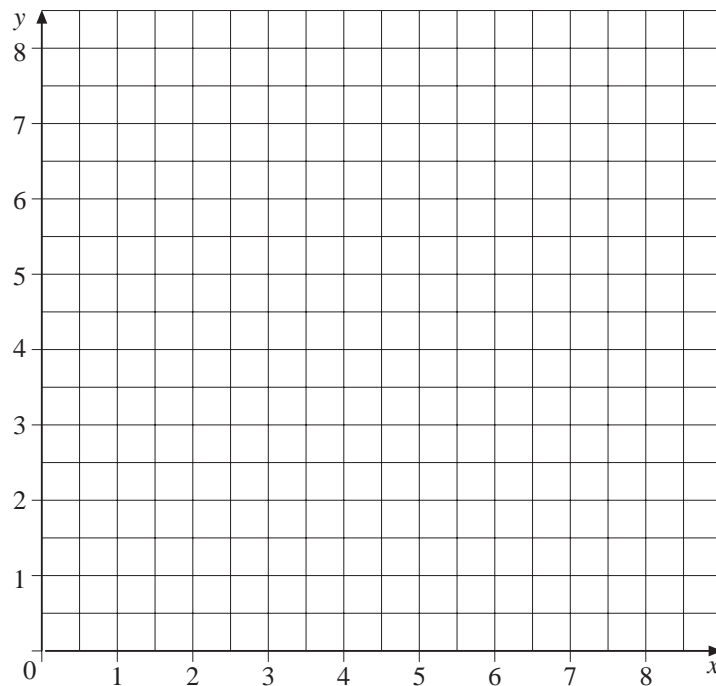
# 24 Coordinates

## 24.1 Plotting Points

1. On a copy of the grid plot the following points.

Label each point with the given letter.

- (a) A : (2, 1)
- (b) B : (8, 8)
- (c) C : (6, 3)
- (d) D : (4, 3)
- (e) E : (2, 5)
- (f) F : (6, 5)
- (g) G : (6, 8)
- (h) H : (1, 7)

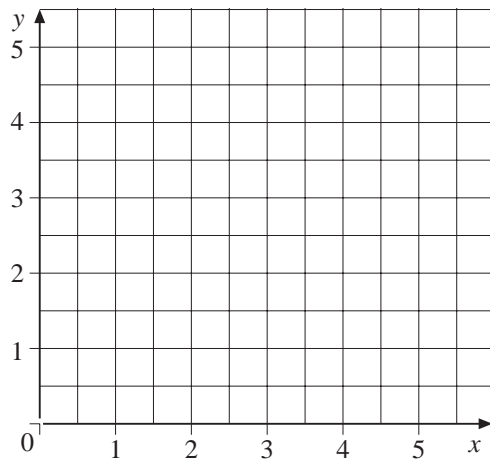


2. In the previous question,

- (a) which three points all lie on the same grid line?
- (b) is there another set of 3 points which lie on a straight line?

3. (a) On a copy of the following grid, plot these points:

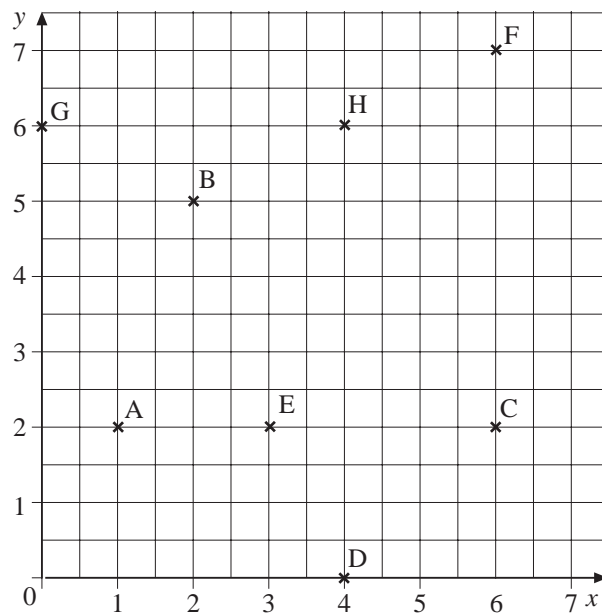
A : (1, 1),    B : (1, 3),    C : (2, 2),    D : (3, 3),    E : (3, 1)



- (b) With straight lines, join the points A and B, B and C, C and D, D and E.

## 24.2 Finding Coordinates

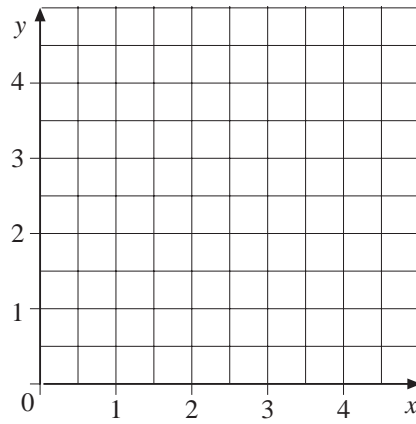
1.



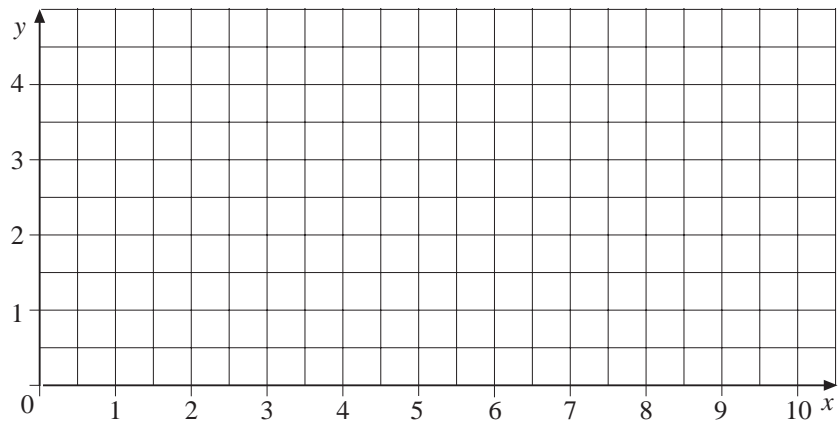
On the grid above, what are the coordinates of each of the following points?

- |       |       |       |       |
|-------|-------|-------|-------|
| (a) A | (b) B | (c) C | (d) D |
| (e) E | (f) F | (g) G | (h) H |

2. On a grid like the one below, draw the letter H, using some of the grid lines. Write down the coordinates of the points used.



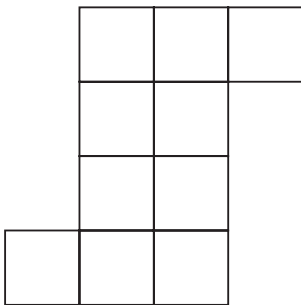
3. Write down instructions to draw *your* initials on a grid like the one below.



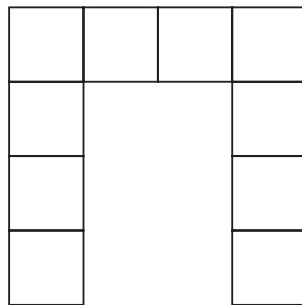
# Miscellaneous Exercises

- Without using a calculator, write down the answers to
  - $47 \times 10$
  - $53 \times 100$
  - $260 \div 10$
  - $4000 \div 100$
- Guttering comes in 5 m lengths, How many lengths are needed to cover a distance of 37 m?
- Videos cost £8.99 each. How many can you buy for £50? How much change will you get?
- Find
  - the perimeter
  - the areaof each of the shapes below. (Each small square is a 1 cm square.)

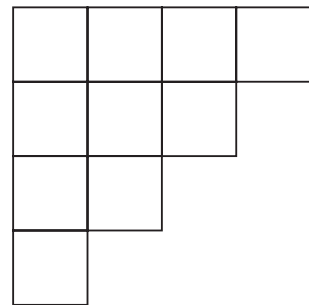
Shape A



Shape B



Shape C



- A train leaves Reading at 1155 hours. It should take 28 minutes to reach the next stop at London Paddington. At what time is it due at London Paddington? (Give your answer in 24-hour clock time.)
- You leave for school at 8.47 am, and it takes you 19 minutes to get to school. At what time will you arrive there?
- The schedule of programmes on BBC1 one evening is shown below.

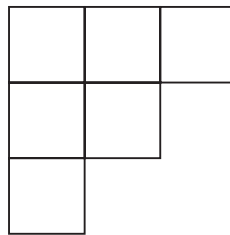
7.30 pm	<i>Top of the Pops</i>
8.00 pm	<i>Only Fools and Horses</i>
9.00 pm	<i>News</i>
9.30 pm	<i>Hetty Wainthrop Investigates</i>
10.20 pm	<i>Parkinson</i>
11.15 pm	<i>Film</i>

- (a) For how many minutes does *Parkinson* last?
- (b) If I watch *Only Fools and Horses* and *Hetty Wainthrop Investigates*, for how long shall I watch TV?
- (c) The film which starts at 11.15 pm lasts for 110 minutes. At what time does it finish?

8. Find the total cost of

- 4 beefburgers @ £1.35 each
- 5 portions of French fries @ £0.65 per portion
- 3 mugs of coffee @ £0.85 per mug

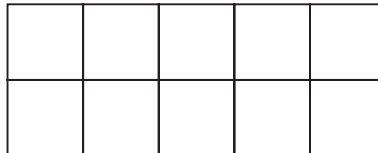
9. Shade  $\frac{2}{3}$  of this shape.



10. Calculate

- (a)  $\frac{1}{8}$  of 16 m,
- (b)  $\frac{3}{10}$  of 20 kg

11. Shade 20% of this shape.



What percentage of the whole shape is *not* shaded?

12. Calculate

- (a) 25% of £60,
- (b) 10% of 50 m.


13. Put these numbers into the correct boxes in the table below.






12, 7, 39, 4, 9, 76, 20, 17, 10, 1

	<i>Odd</i>	<i>Even</i>
<i>One digit</i>		
<i>Two digits</i>		

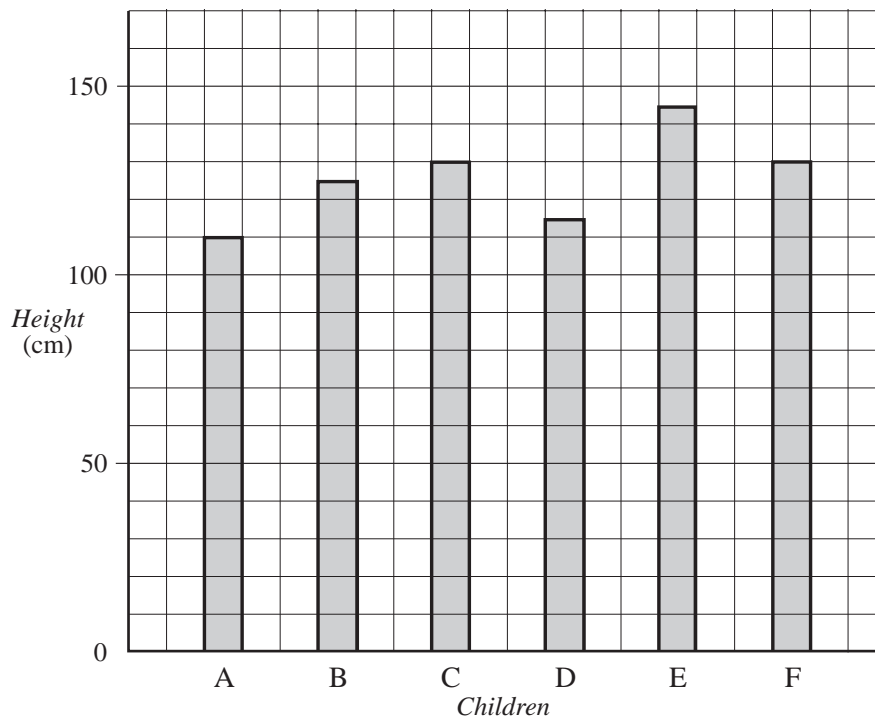
14. Six pupils were asked how much television they watched last night. Here are their replies.

Name	Lucy	Tom	Jay	Peter	Sarah	John
Minutes	60	75	120	15	135	180

Using the key  = 30 minutes, copy and complete the diagram below.

Lucy			
Tom			
Jay			
Peter			
Sarah			
John			

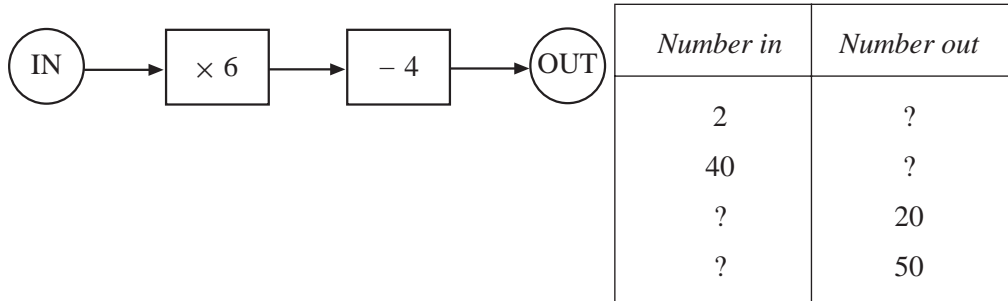
15. The heights of six children are shown below.



- Which child is the tallest?
- Which child is the shortest?
- What is the difference in height between child B and child C?
- Which of the children are the same height?

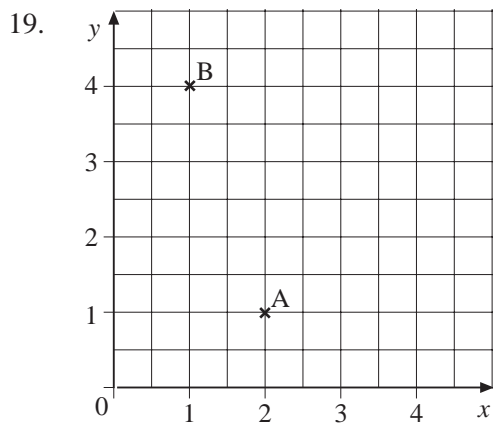
16. Two dice are thrown. The *difference* in the scores is noted.  
What are the possible outcomes for this experiment?

17. For the number machine below, copy and complete the input / output table.



18. Find the next two terms for each of the following sets of numbers. For each set, state the rule that you have used.

- (a) 1, 5, 9, 13, . . . ., . . . .  
 (b) 30, 27, 24, 21, . . . ., . . . .  
 (c) 2, 3, 5, 8, 12, . . . ., . . . .



What are the coordinates of

- (a) A, (b) B?

Copy the grid and mark the positions of the points

- (c) C, with coordinates (4, 3),  
 (d) D, with coordinates (0, 3).