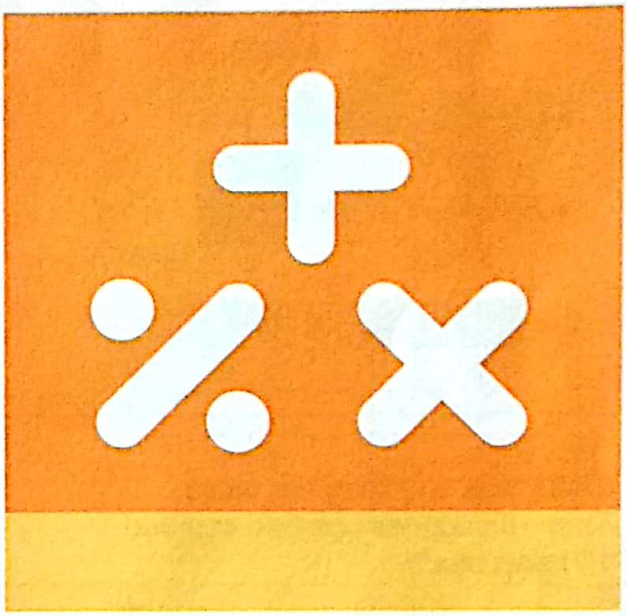
ICAS

PAPER D



2017 MATHEMATICS

DO NOT OPEN THIS BOOKLET UNTIL INSTRUCTED.

40 QUESTIONS

TIME ALLOWED: 1 HOUR

STUDENT'S NAME:

Read the instructions on the **ANSWER SHEET** and fill in your **NAME**, **SCHOOL** and **OTHER INFORMATION**.

Use a pencil. Do **NOT** use a coloured pencil or a pen.

Rub out any mistakes completely.

You **MUST** record your answers on the **ANSWER SHEET**.

Mark only **ONE** answer for each question.

Your score will be the number of correct answers.

Marks are **NOT** deducted for incorrect answers.

There are **35 MULTIPLE-CHOICE QUESTIONS** (1–35).

Use the information provided to choose the **BEST** answer from the four possible options.

On your **ANSWER SHEET** fill in the oval that matches your answer.

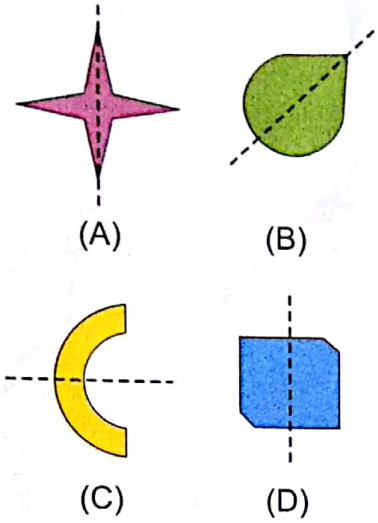
There are **5 FREE-RESPONSE QUESTIONS** (36–40).

Write your answer in the boxes provided on the **ANSWER SHEET** and fill in the ovals that match your answer.

You may use a ruler and spare paper.

You are **NOT** allowed to use a calculator.

1. Which of these dotted lines is **NOT** a line of symmetry?



2. Claire was checking her pulse. After 10 seconds she had counted 15 heart beats.

What was her pulse rate in beats per minute?

(A) 25
(B) 60
(C) 90
(D) 150

3. $40 \div 8 = 20 \div$?

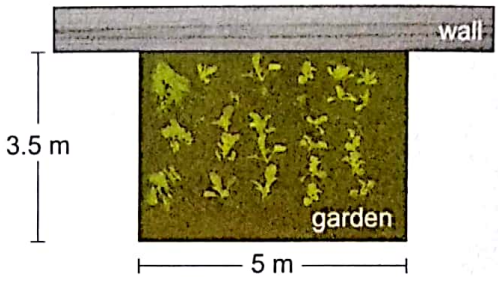
What must the value of ? be?

(A) 4
(B) 5
(C) 8
(D) 10

4. What needs to be done to 246 to get 2.46 as the answer?

(A) $\div 100$ (B) $\div 10$
(C) $\times 10$ (D) $\times 100$

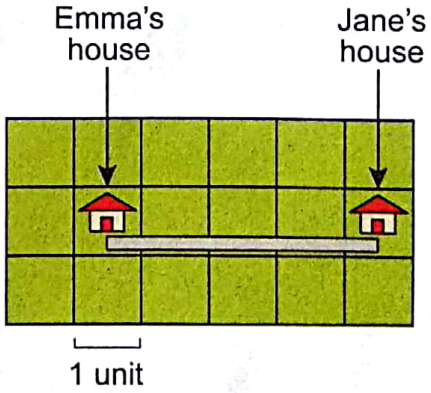
5. Henry built a rectangular garden against a wall.



What length of fencing is needed to enclose the garden?

(A) 8.5 metres
(B) 12 metres
(C) 17 metres
(D) 17.5 metres

6. The entrance to Emma's house is 200 metres from the entrance to Jane's house as shown.



What does 1 unit on the map represent?

(A) 20 metres
(B) 25 metres
(C) 40 metres
(D) 50 metres

7. Jason noticed these clocks at the airport showing local times for the same day.

London
am

Sydney
pm

What is the time difference between London and Sydney?

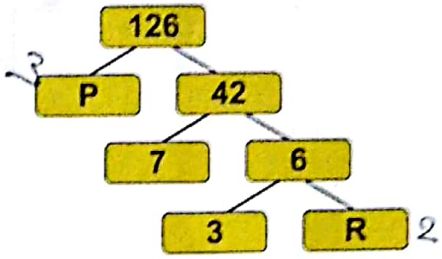
(A) 3 hours
(B) 7 hours
(C) 9 hours
(D) 15 hours

8. Three games were played at a party. The winners of the first two games could each choose a toy car and a balloon, leaving a balloon for the winner of the 3rd game.

How many choices did the winner of the 2nd game have?

(A) 2
(B) 3
(C) 4
(D) 5

9. Mithra was asked to complete this factor tree for the number 126. The number in each box is the product of the two numbers below it.



What numbers are represented by P and R?

	P	R
(A)	2	2
(B)	2	3
(C)	3	2
(D)	3	3

10. Gina had a compass.

Gina followed these directions in order:

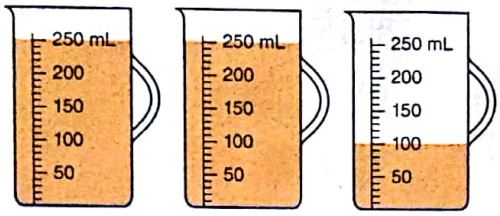
- turn west and walk 10 metres
- turn north and walk 20 metres
- turn east and walk 40 metres
- turn south and walk 20 metres.

How far was Gina from her starting point?

(A) 10 metres
(B) 20 metres
(C) 30 metres
(D) 40 metres

11. Kieren mixed orange juice and berry juice to make a fruit drink.

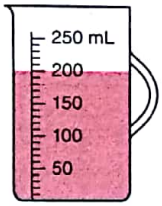
He had this amount of orange juice.



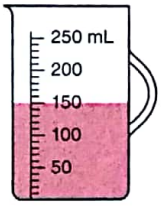
The amount of berry juice he added was one-quarter of the orange juice he had.

Which of these shows the amount of berry juice Kieren added?

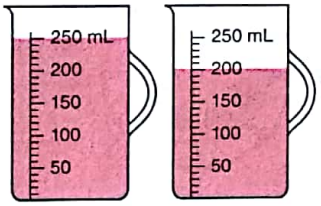
(A)



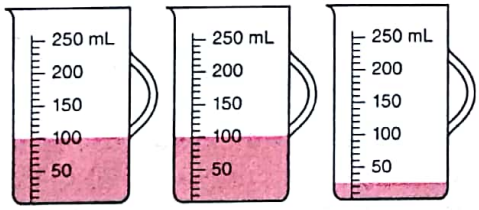
(B)



(C)



(D)



12. Which two numbers differ by 1.3?

(A) 2.4 and 4.1
(B) 3.8 and 5.1
(C) 3.9 and 4.6
(D) 4.8 and 5.1

13. Jack spun a spinner 60 times. He recorded the results in a table.

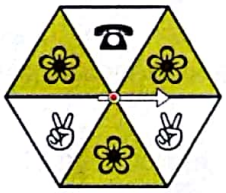
Outcome	Number of times
☎	9
✿	31
✌	20

Which spinner is most likely to be Jack's?

(A)

(B)

(C)



(D)

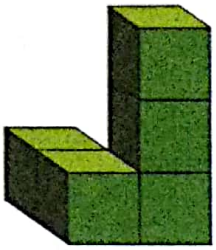
14. ◆ + ◆ + ◆ + ◆ + ★ + ★ = 22

◆ + ◆ + ◆ + ★ = 14

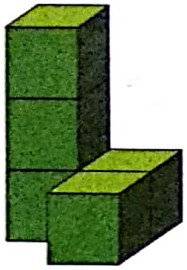
★ = ?

(A) 5
(B) 6
(C) 7
(D) 8

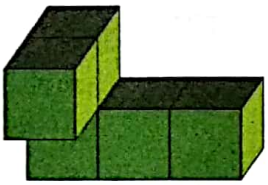
15. Lin made this solid using five cubes.



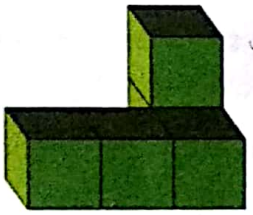
Which of these is **NOT** Lin's solid?



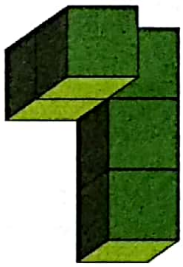
(A)



(B)



(C)



(D)

16. There are 12 animal signs in the Chinese calendar. They repeat every 12 years in the same order. For example, people born in 1955 or 1967 were born in the 'Year of the Goat'.

1955

Year of the Goat

1956

Year of the Monkey

1957

Year of the Rooster

1958

Year of the Dog

Cai turned 35 on 20 April 2017.

In which 'Year' was he born?

(A) Year of the Dog
(B) Year of the Goat
(C) Year of the Rooster
(D) Year of the Monkey

17. Bill took part in a quiz.

There were three types of questions.

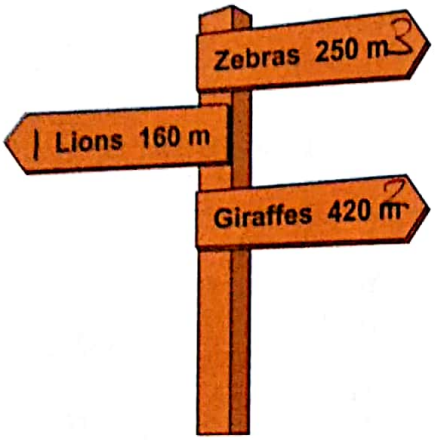
Question type	Points
knowledge	2
skill	5
application	7

Bill scored 39 points.

What is the maximum number of questions that Bill could have answered correctly?

(A) 14
(B) 17
(C) 18
(D) 19

18. Pete is at the zoo. He meets his friends at a kiosk where he reads this sign.

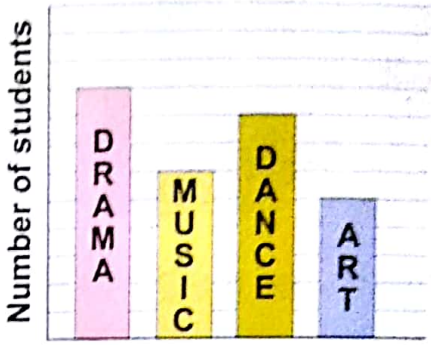


They decide to visit the lions, giraffes and zebras in that order. These three animal exhibits lie on the same straight path.

How far will they walk from the kiosk to where they will finish at the zebras?

(A) 750 metres
(B) 830 metres
(C) 910 metres
(D) 990 metres

19. Ingrid drew a column graph to show some after-hours activities at school.



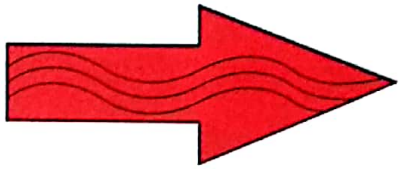
Eight more students study drama than study art.

How many students study music?

(A) 5
(B) 6
(C) 10
(D) 12

20. Vijay read that the angle sum of a triangle is 180°.

He joined a rectangle and a triangle to draw this arrow.



What is the angle sum of Vijay's arrow?

(A) 900° (B) 720°
(C) 540° (D) 360°

21. Fadi only had from 3:40 pm until 5:25 pm to see a movie with his friends.

This was the movie timetable.

Return of the Snowman
Length: 2 hours 10 minutes
Showing 3:40 pm and 5:50 pm

Flying Home
Length: 1 hour 20 minutes
Showing 3:20 pm and 4:05 pm

Wally the Watchmaker
Length: 1 hour 45 minutes
Showing 3:30 pm and 5:20 pm

The Secret Door
Length: 1 hour 40 minutes
Showing 3:50 pm and 4:55 pm

Fadi and his friends watched one complete movie together.

Which movie did they watch?

(A) *Return of the Snowman*
(B) *Flying Home*
(C) *Wally the Watchmaker*
(D) *The Secret Door*

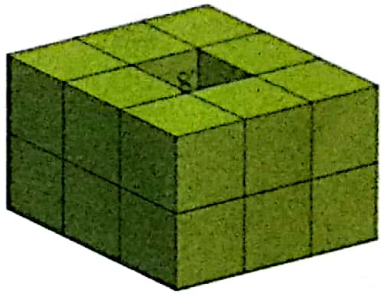
22. Debbie used the digits 4, 7 and 8 to make 2-digit numbers. For example, 47 and 88 were two of the nine numbers that Debbie made.

How many of these 2-digit numbers are divisible by 3?

(A) 1
(B) 2
(C) 3
(D) 4

23. Lisa made this solid using 16 cubes.

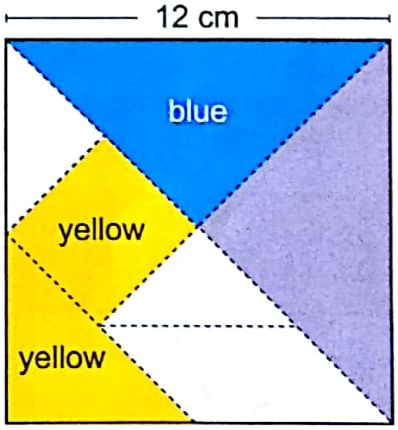
She painted the outside of the solid including the base and the faces inside the hole in the middle.



How many faces of the small cubes have been painted?

(A) 40
(B) 42
(C) 44
(D) 48

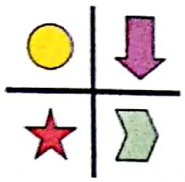
24. Tara drew this tangram on a square piece of paper and then cut out 7 pieces along the dotted lines.



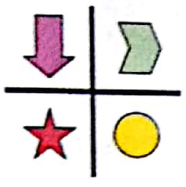
What is the combined area of the yellow pieces, in square centimetres?

(A) 12
(B) 21
(C) 36
(D) 43

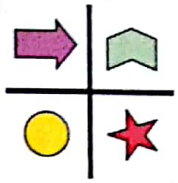
25. Bill drew this picture. Then he gave it a three-quarter turn in a clockwise direction.



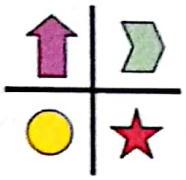
Which of these shows the picture after the turn?



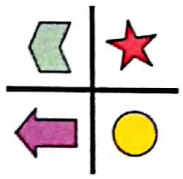
(A)



(B)



(C)



(D)

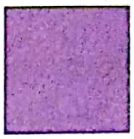
26. Today, Jackie's bean plant has 10 leaves.

Jackie's bean plant grows 2 new leaves every 3 days and loses none.

How many more days will it be before her plant has 40 leaves?

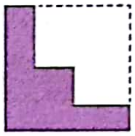
(A) 60
(B) 45
(C) 27
(D) 20

27. Isha had a paper square.

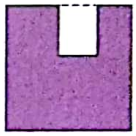


She cut a piece out of the square and made a new shape that had the same perimeter as her original square.

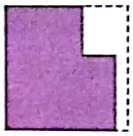
Which one of these could be Isha's new shape?



(A)



(B)



(C)

(D)

28. Five students made 114 cupcakes to sell at school.

This table shows some of the information about the number of cupcakes each student made.

Student	Number of Cupcakes
Marcia	
Jacob	?
Jen	
Rachel	?
Nathan	

KEY  = 12 cupcakes

Jacob made eight more cupcakes than Rachel.

How many cupcakes did Jacob make?

(A) 20
(B) 24
(C) 28
(D) 32

29. Jim is using pebbles and sticks to represent whole numbers.

- Each stick has the same positive value.
- The value of a pebble is greater than the value of a stick.
- Each pebble has the same value.

This combination represents the number 21.

Jim made this combination.

Which of these numbers could this combination represent?

(A) 7 (B) 9
(C) 11 (D) 13

30. Raj went shopping.

On Monday he spent half of his money.

On Tuesday he spent one-quarter of his remaining money.

He was left with $18.

How much money did Raj begin with?

(A) $48
(B) $72
(C) $108
(D) $144

31. Sarah is making jelly for 8 people using this recipe.

Strawberry Jelly for 4 People

Ingredients

- 425 mL apple juice
- 140 g frozen strawberries
- 1 tablespoon gelatine

Sarah has only a tablespoon and a $\frac{1}{2}$ cup to measure the apple juice.

She uses this table as a guide.

Liquid Measures

1 tablespoon = 20 mL

1 cup = 250 mL

Which combination will be closest to the amount of apple juice needed to make the jelly for 8 people?

	Number of $\frac{1}{2}$ cups	Number of tablespoons
(A)	3	3
(B)	3	5
(C)	6	3
(D)	6	5

32. A revolving door at a fun fair faces north.

It starts moving in a clockwise direction.

With each click it turns through 45 degrees. Each time it clicks back to north, it changes direction.

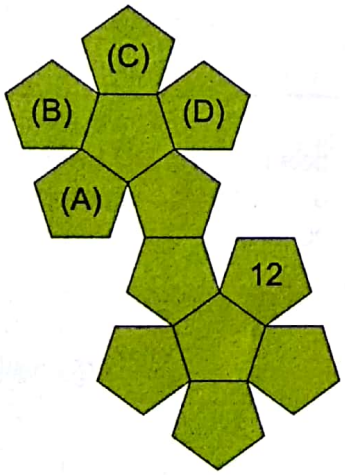
Which direction is the door facing after 27 clicks?

(A) north-east
(B) north-west
(C) south-east
(D) south-west

33. Lien folded this net to make a 12-sided dice.

He placed it on the table so that 12 was showing on top.

Which face was on the bottom?



34. Mr Ng has solar panels on his roof. The panels generate 2 kilowatt hours (kWh) of electricity every hour the sun shines.

1 January – 1 April	
Hours of sunlight	**Number of days**
0	10
2	20
4	30
6	20
8	10

Mr Ng was paid a rebate of $0.10 for every kWh generated.

How much was his rebate for the 3-month period, to the nearest dollar?

(A) $18
(B) $36
(C) $72
(D) $108

35. Oscar, Lily and Jack collect souvenir coins.

Oscar has 44 more coins than Lily and 48 more coins than Jack. Oscar has 6 more coins than Lily and Jack combined.

How many coins do Oscar, Lily and Jack have altogether?

(A) 196
(B) 166
(C) 156
(D) 146

QUESTIONS 36 TO 40 ARE FREE RESPONSE.

Write your answer in the boxes provided on the ANSWER SHEET and fill in the ovals that match your answer.

36. The numbers in the third row form a pattern based on the numbers in the patterns of the first two rows.

1,	3,	6,	10,	15,	__,	__,
75,	67,	59,	51,	43,	__,	__,
75,	201,	354,	510,	645,	__,	?

What value should ? be?

37. At midnight on Friday, Megan's clock showed the correct time as 0:00 am.

At midnight on Saturday, her clock showed the time as 11:48 pm.

At midnight on Sunday, her clock showed the time as 11:36 pm.

At 6:00 am on Monday, Megan set her clock so that it showed 6:02 am.

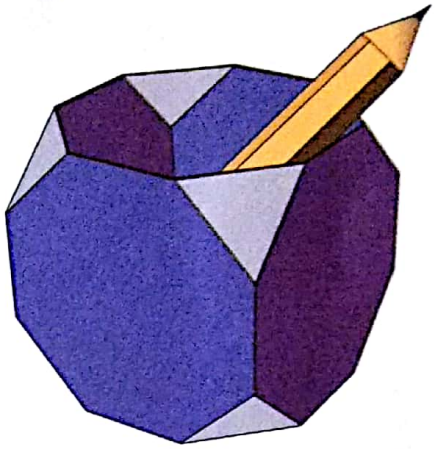
What is the time difference, in minutes, between Megan's clock and the correct time of midnight on Thursday the same week?

38. An ice skating rink is for hire at $80 per hour. Skates may be hired at $10 per pair. A school group hired the ice skating rink for 2 hours for an excursion. Half of the people in the group hired skates.

The group paid a total of $620 for the skating rink and skate hire.

How many people were there in the group?

39. Jia made this plastic pencil holder using octagons and triangles. It was open at the top.



She joined each pair of edges.

How many joins are there in Jia's pencil holder?

40. Sam and Abby did regular exercise in a gym at 4 pm on given days.

Abby exercised every third day while Sam only exercised on Thursdays.

They both started together on Thursday, 1st January, 2015.

How many times in 2015 did they exercise in the gym together?

ACKNOWLEDGMENT

THE FOLLOWING YEAR LEVELS SHOULD SIT THIS PAPER:

Australia	Year 6
Brunei	Primary 6
Hong Kong	Primary 6
Indian Subcontinent[1]	Class 6
Indonesia	Year 7
Malaysia	Standard 6
Middle East[2]	Class 6
New Zealand/Pacific[3]	Year 7
Singapore	Primary 5
Southern Africa[4]	Grade 6

1 Indian Subcontinent Region: India, Sri Lanka, Nepal, Bhutan and Bangladesh.
2 Middle East Region: United Arab Emirates, Qatar, Kuwait, Saudi Arabia, Egypt, Bahrain, Oman, Turkey, Lebanon, Tunisia, Morocco, Libya, Algeria and Jordan.
3 Pacific Region: Vanuatu, Papua New Guinea and Fiji.
4 Southern Africa Region: South Africa, Botswana, Lesotho, Swaziland, Zimbabwe and Namibia.

PAPER D

UNSW Global AUSTRALIA

ANALYSIS BY QUESTION

The following table shows the questions you answered correctly ☑ and shades the questions that you answered incorrectly ☐. The questions are ranked from hardest at the top to easiest at the bottom.

Difficult Questions

Question content	Area assessed	Question number	Correct answer
Solve a problem involving time adjustments	Measures & Units	37	45
Find the lowest common multiple of two numbers to solve a calendar problem	Measures & Units	40	18
Determine the number of adjoining edges on an open truncated cube	Space & Geometry	39	28
Find the relationship between three patterns to solve a problem	Algebra & Patterns	36	756
Calculate the angle sum of a polygon by dividing it into triangles	Measures & Units	20	A
Solve a problem involving duration and time difference	Measures & Units	21	B
Determine what combination of measuring devices will make up a given quantity	Measures & Units	31	D
Calculate the number of students given rates for various items to hire	Number & Arithmetic	38	92
Solve a word problem involving a number of steps	Number & Arithmetic	35	B
Solve a problem involving angles and changing direction	Space & Geometry	32	D
Find the distance of a particular route	Number & Arithmetic	18	C
Use information in a table and text to solve a financial problem	Chance & Data	34	C
Determine the position of the opposite face on the net of a dodecahedron	Space & Geometry	33	B
Identify the cut-out shape that has the same perimeter as the original square	Measures & Units	27	A
Solve a problem involving multiples of 2, 5 and 7	Algebra & Patterns	17	C
Given the residual and amounts spent find the original amount of money	Number & Arithmetic	30	A
Find all 2-digit numbers divisible by 3 that can be made from 3 given digits	Number & Arithmetic	22	D
Calculate the area of a fraction of a square	Measures & Units	24	C
Solve a problem involving leaves	Number & Arithmetic	26	B
Use information about the date and the Chinese calendar to solve a problem	Measures & Units	16	A
Use given information to solve a pictograph	Chance & Data	28	C
Solve a problem involving unusual symbols to represent numbers	Algebra & Patterns	29	B
Determine the number of ways two items can be selected	Chance & Data	8	A
Calculate the scale on a map given the distance between two objects	Space & Geometry	6	D
Count the number of faces that have been painted	Space & Geometry	23	D
Identify position relative to starting point after a number of moves	Space & Geometry	10	C
Calculate a time difference given two analogue clocks using am or pm	Measures & Units	7	C
Identify the picture that represents a three-quarter clockwise rotation	Space & Geometry	25	B
Calculate the amount of fencing needed to enclose a garden	Measures & Units	5	B
Identify the pair of numbers with a given difference	Number & Arithmetic	12	B
Identify the solid that is different from the others	Space & Geometry	15	B
Find the value of a symbol given two number sentences	Algebra & Patterns	14	A
Identify the container that measures one-quarter of another quantity	Measures & Units	11	B
Use given information to determine the scale on a column graph	Chance & Data	19	D
Use division to find the missing numbers in a factor tree	Number & Arithmetic	9	C
Change a rate per 10 seconds to a rate per minute	Number & Arithmetic	2	C
Identify the operation that results in moving the decimal point	Number & Arithmetic	4	A
Complete a number sentence	Algebra & Patterns	3	A
Identify the spinner that would produce results like those shown in a table	Chance & Data	13	D
Identify the shape that does not have a line of symmetry	Space & Geometry	1	D

Easy Questions