External Measurement of Student Achievement

May 2010

Grade 9

Mathematics

TEST INSTRUCTIONS

- Please make sure that you have a separate answer sheet with this test paper.
- Please check that the answer sheet has your details printed on it. If not, print your name and date of birth on your answer sheet in the area provided.
- Please check that the subject and grade number on your answer sheet matches this question paper.
- This test has **40 QUESTIONS**. Each question has four possible answers. Only one is correct.
- Please use a pencil only to shade in the answer bubbleof your choice on your answer sheet.
- Choose the correct answer from **A**, **B**, **C** or **D** and shade this bubble in on your **MATHEMATICS ANSWER SHEET**.
- If you make a mistake then rub out your answer completely and shade in the bubble of your new answer.
- All answers must be marked on your **ANSWER SHEET**. You are allowed **1 hour and 10 minutes** for this test.

مجلس أبوظبي للتعليم
Abu Dhabi Education Council

PEARSON

1 2.3×10^{-2} is multiplied by 6.0×10^{-3}.

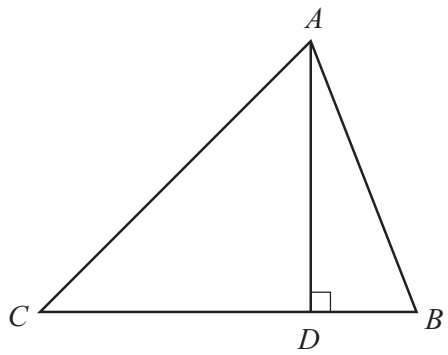
What is the result?

A 0.0138
B 0.00138
C 1.38×10^{-5}
D 1.38×10^{-4}

2 If m is an **odd** number and n is an **even** number, which expression is an odd number?

A $5m + 2n$
B $4m + 3n$
C $2m + 7n$
D $4(m + n)$

3

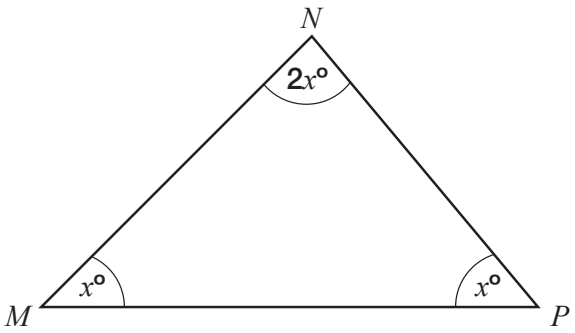


In the triangle ABC, $AD = 6$ cm and the area of $\triangle ABC$ is 30 cm^2.

What is the length of CB?

A 5 cm
B 10 cm
C 15 cm
D 20 cm

4



In the triangle *MNP*, what is the value of *x*?

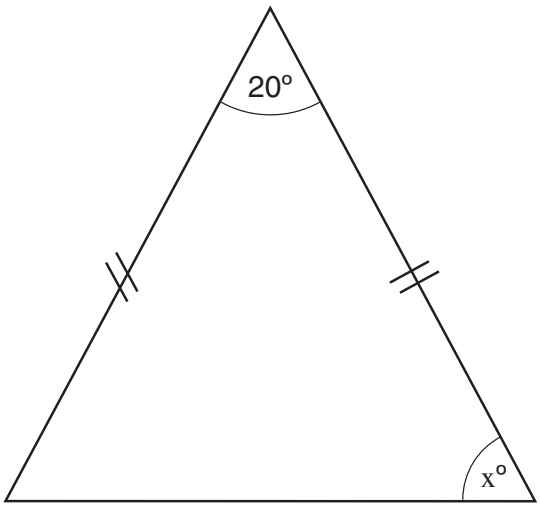
A 35
B 40
C 45
D 50

5

The mean of 12, 18, 10 and 12 is

A 12
B 13
C 26
D 52

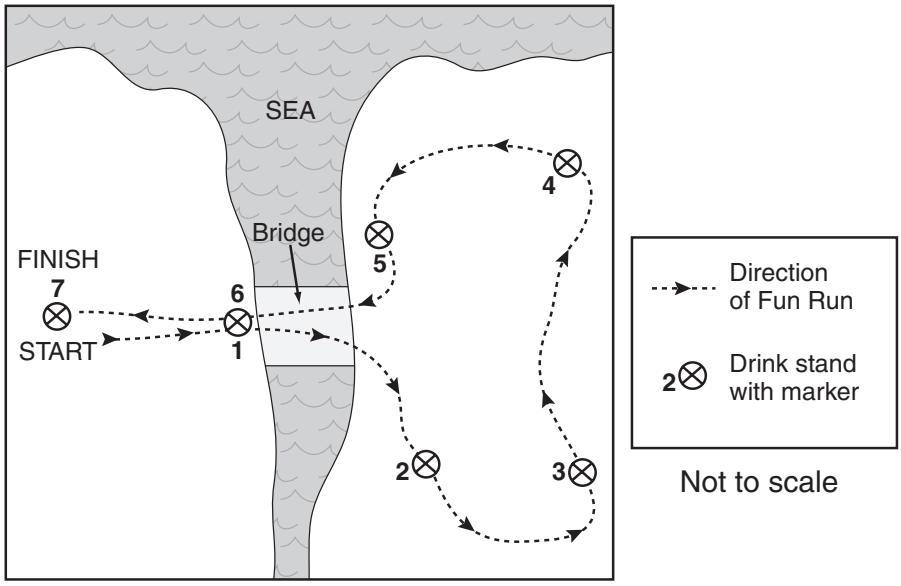
6



The value of *x* is

A 20
B 70
C 80
D 160

7 This map shows a fun run course.



The drink stands along the run are 1 km apart except for drink stand 5 and drink stand 6 which are 650 m apart.

What is the best estimate of the length of the bridge?

A 325 m
B 650 m
C 675 m
D 725 m

8 Amal owns some books. $\frac{5}{12}$ of them are nature books, $\frac{1}{3}$ of them are science books, and the rest are mathematics books.

What fraction of Amal's books are mathematics books?

A $\frac{9}{12}$
B $\frac{1}{4}$
C $\frac{2}{5}$
D $\frac{9}{15}$

9 $\frac{5}{8} \square \frac{3}{5}$

The sign that goes in the box to correctly complete the statement is

A >
B <
C =
D ≤

10 Given that **45.8 × 165 = 7557**, determine the exact value of $\frac{7557}{4580}$.

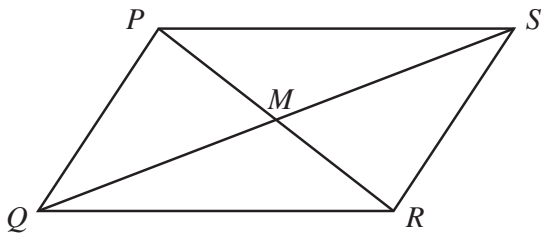
A 1.65
B 16.5
C 1 650
D 16 500

11 Three-quarters of a number and 25% of the same number totals 11.

The number is

A 8
B 9
C 11
D 12

12 *QPSR* is a parallelogram. *M* is the point of intersection of the diagonals.



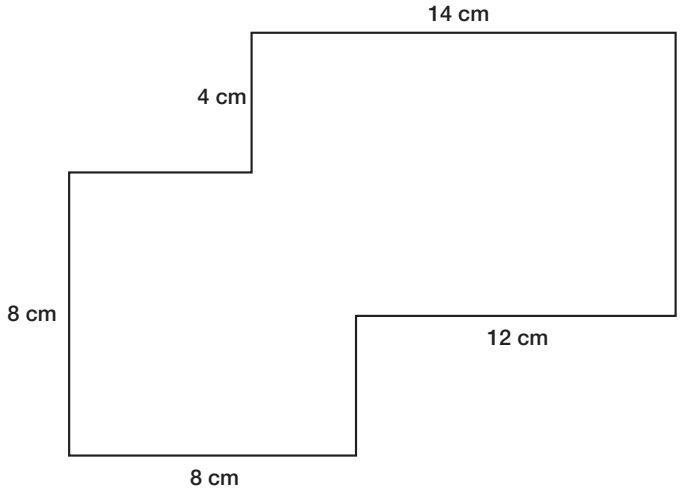
Which two triangles are congruent?

A *PQM* and *PSM*
B *RMS* and *RMQ*
C *QSR* and *PRS*
D *PSM* and *RQM*

13 What is a simpler form of the expression: $5(3a - 3b) - 3(a - b)$?

A $5a - 12b$
B $5a - 18b$
C $12a - 12b$
D $12a - 18b$

14

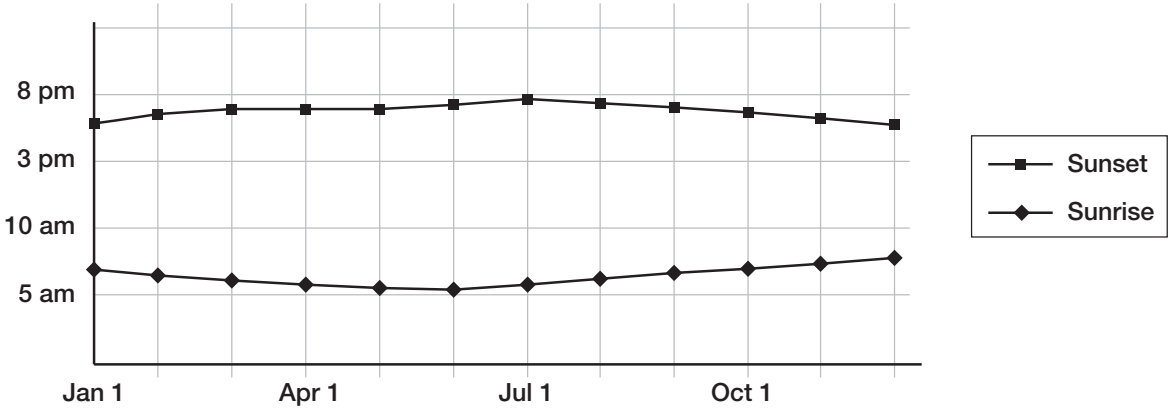


All the angles in this figure are right angles.

What is its perimeter?

A 46 cm
B 54 cm
C 64 cm
D 68 cm

15 The times of sunrise and sunset through the year at Abu Dhabi are shown in the graph below.



What is the number of hours of daylight for the longest day?

A 10 hours
B 11 hours
C 14 hours
D 19 hours

16 What is $0.1\dot{2}$ as a fraction?

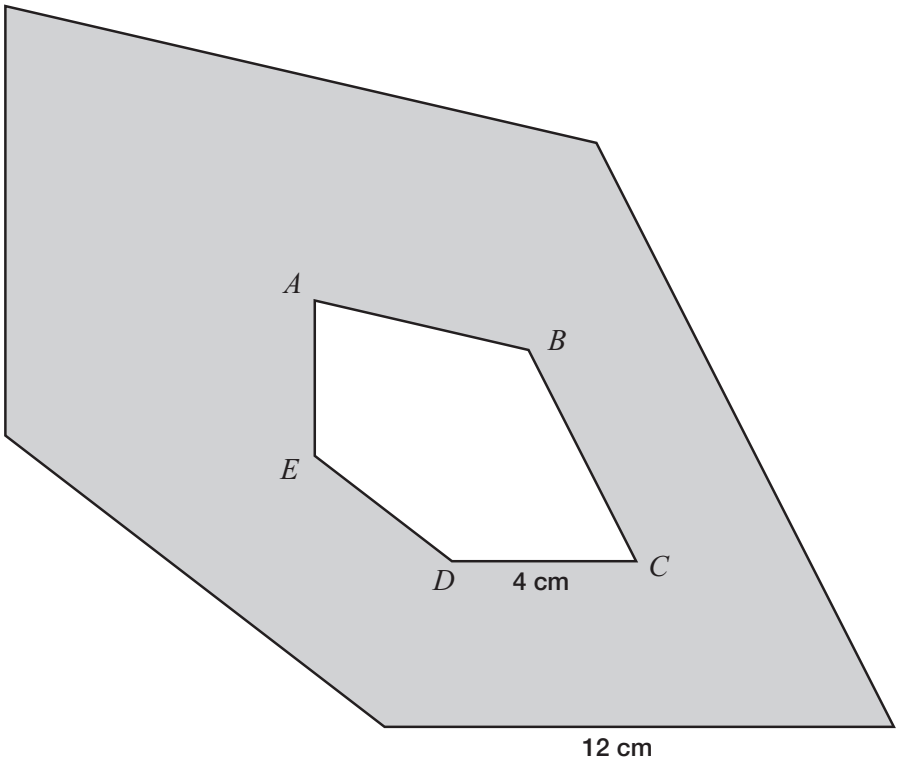
A $\frac{11}{90}$

B $\frac{11}{99}$

C $\frac{12}{90}$

D $\frac{12}{99}$

17 The two pentagons shown are similar.



The area of pentagon *ABCDE* is 29 cm^2.

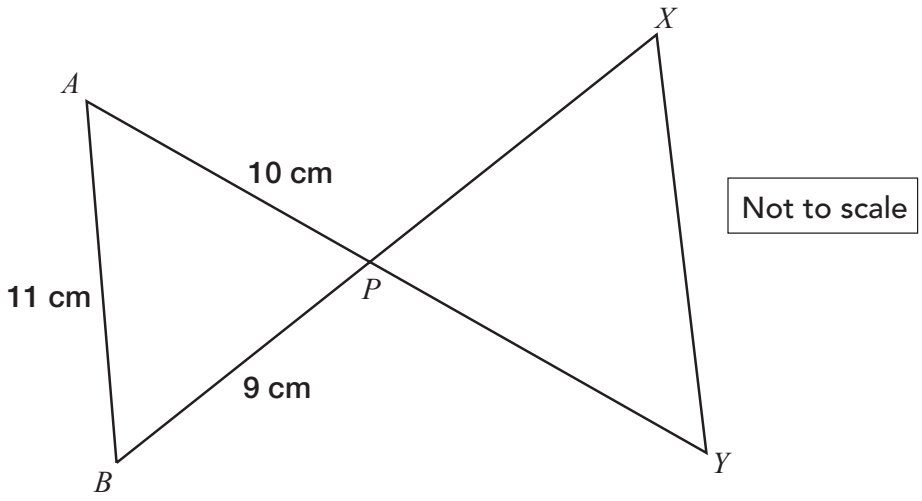
What is the area of the **shaded** part?

A 87 cm^2
B 232 cm^2
C 261 cm^2
D 290 cm^2

18 What is the equation of the straight line that passes through the points (–3, 1) and (6, 4)?

A $3y = x + 6$
B $3y = x - 6$
C $y = 3x + 2$
D $y = 3x - 2$

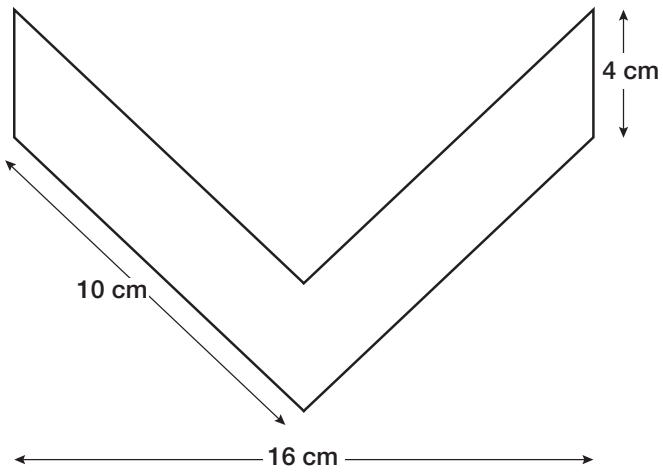
19 In the diagram below, $\angle BAP = \angle PYX$ and $AP = PY$.



What is the length of PX?

A 9 cm
B 10 cm
C 11 cm
D 20 cm

20

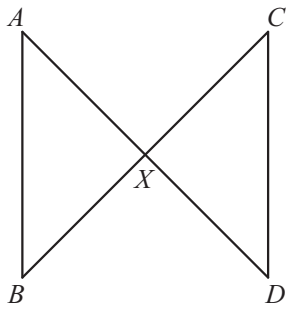


This symmetrical 'V' shape is made from 2 parallelograms.

What is its area?

A 30 cm^2
B 48 cm^2
C 64 cm^2
D 80 cm^2

21 In the diagram, AB and CD are equal in length and parallel.



Why are triangles AXB and DXC congruent?

A Right angle – Hypotenuse – Side (RHS)
B Side – Angle – Side (SAS)
C Side – Side – Side (SSS)
D Angle – Angle – Side (AAS)

22 Rida wants to earn 2 000 Dhs a year by investing money at 5% simple interest.

How much must she invest?

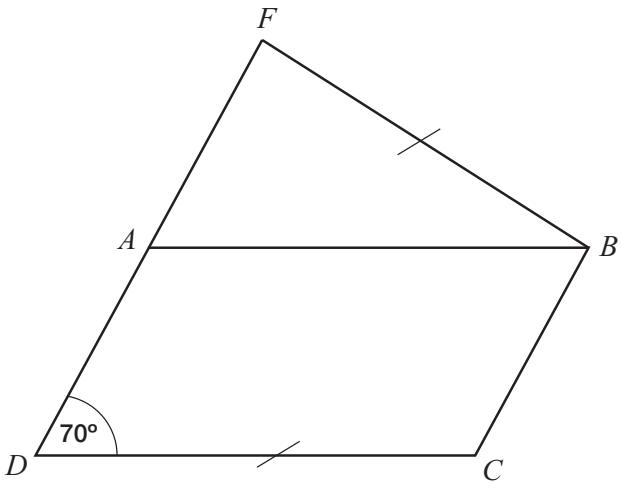
A 4 000 Dhs
B 40 000 Dhs
C 400 000 Dhs
D 4 000 000 Dhs

23 The expression $3(3a + b) – 2(2a – 3b)$ is equivalent to

A $5a + 9b$
B $5a – 3b$
C $13a + 9b$
D $13a – 3b$

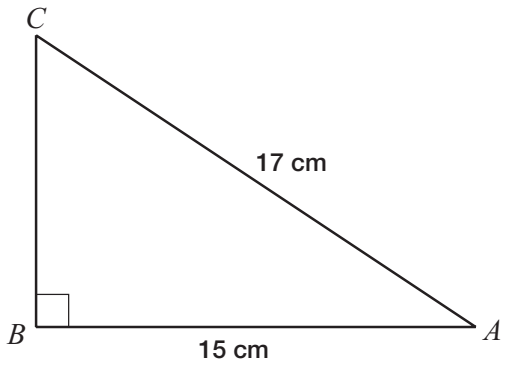
24 *ABCD* is a parallelogram.
DA is extended to *F* so that
$BF = CD$.
$\angle ADC = 70°$.

What is $\angle ABF$?



A 30°
B 40°
C 50°
D 60°

25 In the triangle *BCA*, which expression is true?



A $\tan \angle BAC = \frac{8}{15}$

B $\sin \angle BAC = \frac{15}{17}$

C $\cos \angle BAC = \frac{17}{15}$

D $\tan \angle BAC = \frac{15}{8}$

26 $\frac{2x + 3}{2} = 2a$

A solution to the equation is $x = -2$.

What is the value of a?

A 1

B $\frac{7}{4}$

C $\frac{15}{4}$

D $-\frac{1}{4}$

27 Redha rides his bicycle at an average speed of 36 kilometres per hour.

What is his speed expressed in metres per second?

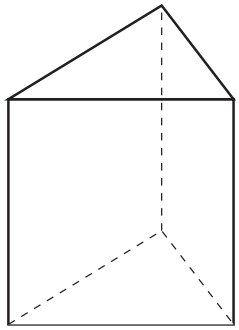
A 10
B 36
C 60
D 600

28 Nadia goes to spend 100 Dhs on chocolate bars for her class party.
The chocolate bars are usually priced at 2.50 Dhs each, but today they are selling at 20% discount.

How many more bars can Nadia buy at the discount price?

A 10
B 20
C 40
D 50

29



All the edges of this triangular prism are 6 cm long.

What is its surface area?

A $18\sqrt{3}$ cm^2
B 54 cm^2
C $3\sqrt{3} + 108$ cm^2
D $18\sqrt{3} + 108$ cm^2

30 $(\frac{3}{2}, 0)$ is the midpoint of the line joining two points. One is (–1, –5).

What is the other one?

A $(\frac{1}{4}, -2\frac{1}{2})$

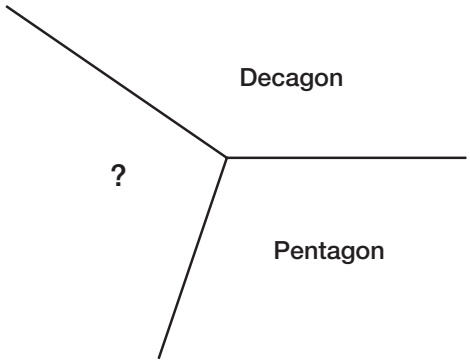
B (3, 5)

C (4, 5)

D (5, 4)

31 Three regular polygons are arranged to fill the space around a point.

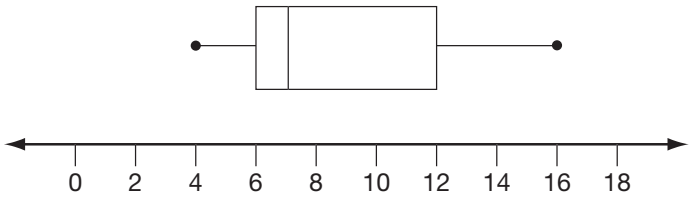
One is a decagon (10 sides).
One is a pentagon.



What is the third polygon?

A square
B pentagon
C hexagon
D octagon

32



Which set of numbers could give the above box-and-whisker plot?

A { 4, 6, 7, 7, 10, 12, 16 }
B { 4, 5, 6, 6, 8, 11, 13, 16 }
C { 4, 6, 7, 10, 16 }
D { 4, 6, 7, 7, 11, 16 }

33 Khaliq invests 2000 Dhs at 5% for 2 years, compounded annually.

What is the total amount at the end of the 2 years?

A $2000\ (1 + 0.05)^3$
B $2000\ (1 + 0.05^2)$
C 2000 (1 + 0.1 + 0.0025)
D 2000 (1 + 0.05)

34 The smaller angle in a rhombus is 60°.
The perimeter of the rhombus is y cm and the area of the rhombus is y cm^2.

What is the value of y?

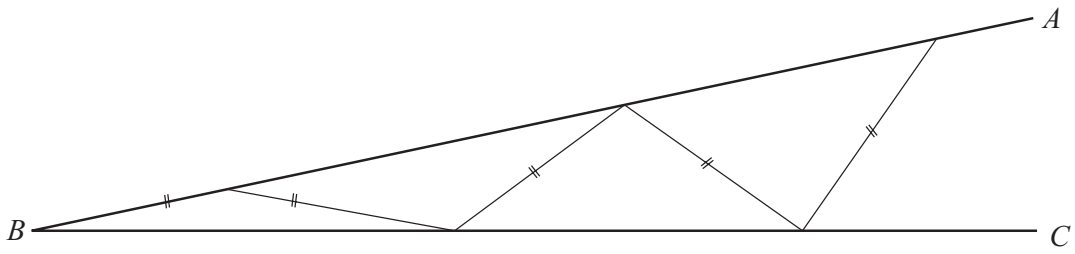
A $\frac{\sqrt{3}}{2}$

B $\frac{32\sqrt{3}}{3}$

C 4

D $\frac{8\sqrt{3}}{3}$

35 $\angle ABC = 12°$. A sequence of isosceles triangles is drawn as shown.



How many such triangles can be drawn?

A 5
B 6
C 7
D 8

36 If $1 - x > 3$ then

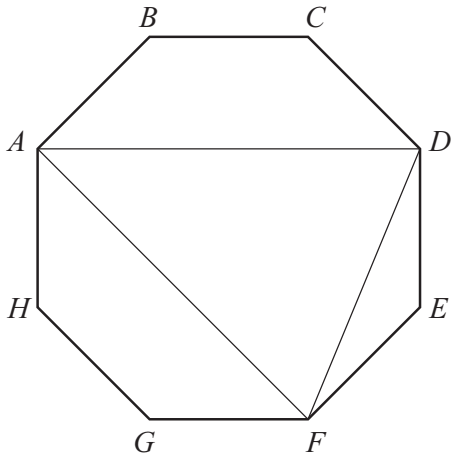
A $x < 2$
B $x > 2$
C $x < -2$
D $x > -2$

37 A certain virus has a mass of approximately 1.5×10^{-9} grams.
A water molecule has a mass of approximately 3×10^{-23} grams.
The virus is n times heavier than a water molecule.

What is the approximate value of n?

A 5×10^{13}
B 2×10^{14}
C 4.5×10^{14}
D 5×10^{14}

38



ABCDEFGH is a regular octagon.

What is the size of $\angle ADF$?

A 36°
B 45°
C 67.5°
D 72°

39 All the edges of a square pyramid are 6 cm long.

What is its volume?

A 48 cm^3
B $36\sqrt{2}$ cm^3
C 72 cm^3
D $108\sqrt{2}$ cm^3

40 The line AB has the same gradient as the line $y = x$ and passes through the point of intersection of the lines $2y = x - 2$ and $3y = x + 1$.

What is the equation of the line AB?

A $y = x + 1$
B $y = x - 5$
C $y = -x + 7$
D $y = -x + 11$