4.6 Forming and Solving Equations: 30-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Solve the equation x - 4 = 9. Give your answer.

(a) Find x. **(1)**

.....

(Total for Question 1 is 1 mark)

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2 A taxi company charges a fixed fee of £3 plus £2.50 per mile travelled. A journey costs £20.50 in total. Let m be the number of miles travelled.

(Total for Question 2 is 3 marks)

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3 Which value of x satisfies the equation 2x - 5 = 9?

- ☐ A) x = 2
- ☐ B) x = 5
- ☐ C) x = 7
- ☐ D) x = 9

(Total for Question 3 is 1 mark)

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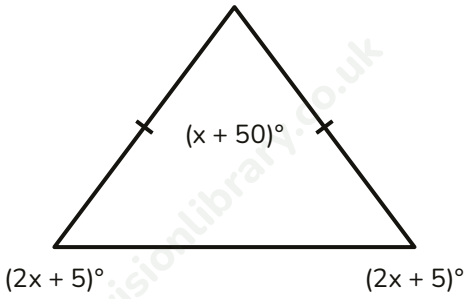
4 Show that the equation 4(2x - 3) = 2(x + 9) simplifies to x = 5

(Total for Question 4 is 2 marks)

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5 A triangle is isosceles. The two equal base angles are each $(2x + 5)$ degrees. The third angle is $(x + 50)$ degrees.

Diagram NOT accurately drawn



(a) Form an equation in x and solve it. **(3)**

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(b) Work out the size of the largest angle in the triangle, giving a reason for your answer. **(2)**

.....

(Total for Question 5 is 5 marks)

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6 Zoe is x years old. Her brother is 3 years older than Zoe. Her mother is 4 times as old as Zoe. The sum of their three ages is 81. Work out how old Zoe is.

(Total for Question 6 is 3 marks)

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7 Form and solve an equation. "Sarah has £2.50. She buys a drink costing d pounds and has £1.10 left. How much did the drink cost?"

(a) Form an equation in d to represent the situation. **(1)**

(b) Solve the equation and give the cost of the drink. **(3)**

.....

(Total for Question 7 is 4 marks)

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8 A rectangle has length equal to 3 more than twice its width. The perimeter of the rectangle is 60 cm. Form an equation and find the width and length.

Diagram NOT accurately drawn



(a) Let the width be w cm. Form an equation using w for the perimeter. **(1)**

(b) Solve your equation to find the width w. **(3)**

.....

(c) Find the length. **(1)**

.....

(Total for Question 8 is 5 marks)

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Mark scheme · 4.6 Forming and Solving Equations: 30-minute Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

(a) x = 13 cao **B1**

(a) Answer: 13

Question 2

correct equation, 3 + 2.5m = 20.5 oe **B1**

correct method to solve, 2.5m = 17.5 oe **M1**

m = 7 (miles) cao, unit required for full marks **A1**

Answer: m = 7 miles

Question 3

C, x = 7 **B1**

Answer: C) x = 7

Question 4

expand both sides correctly, 8x - 12 = 2x + 18 oe **M1**

cso, correct rearrangement shown to give x = 5 with no errors **A1**

Answer: x = 5 (shown)

Question 5

(a) correct equation, 2(2x+5) + (x+50) = 180 oe, or 5x + 60 = 180 **B1**

(a) correct method to solve, 5x = 120 oe **M1**

(a) x = 24 cao **A1**

(a) Answer: x = 24

(b) substitute x = 24 (ft) into x + 50 and into 2x + 5 **M1**

(b) 74 degrees cao, with reason that 74 > 53 **A1**

(b) Answer: 74 degrees

Question 6

x + (x + 3) + 4x = 81 **M1**

6x + 3 = 81 **M1**

13 years **A1**

Answer: 13 years

Question 7

(a) equation formed, e.g. 2.50 - d = 1.10 oe **M1**

(a) Answer: 2.50 - d = 1.10

(b) subtract 1.10 from both sides or rearrange (2.50 - 1.10 = d seen) **M1**

(b) calculate correctly 2.50 - 1.10 = 1.40 **M1**

(b) d = 1.40 cao **A1**

(b) Answer: £1.40

Question 8

(a) equation formed, e.g. 2((2w + 3) + w) = 60 oe **M1**

(a) Answer: 2((2w + 3) + w) = 60

(b) substitute and simplify to linear form, e.g. 6w + 6 = 60 or equivalent **M1**

(b) isolate w correctly, e.g. 6w = 54 seen **M1**

(b) w = 9 cm cao **A1**

(b) Answer: 9 cm

(c) length = 2w + 3 = 21 cm cao **B1**

(c) Answer: 21 cm

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