ALBERTA MATH 20-2 · FINAL EXAM · 50 QUESTIONS

Final Exam — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **A counterexample is best described as**

- A an example that proves a conjecture is true in every case
- B a statement that has been proven using deductive reasoning
- C a specific example that shows a conjecture is false
- D a conclusion reached by observing a pattern

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2 **A rectangle with a width of 6 cm and a length of 9 cm is similar to a larger rectangle with a width of 10 cm. The length of the larger rectangle is**

- A 12 cm
- B 13.5 cm
- C 15 cm
- D 19 cm

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3 **Triangle ABC is shown. AB = 5 cm, BC = 12 cm. The length of AC is**

- A 13 cm
- B 17 cm
- C 10 cm
- D 7 cm

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4 A student stands 25 m from the base of a building and measures the angle of elevation to the top of the building as 40°. The height of the building, to the nearest metre, is

- A 16 m
- B 19 m
- C 21 m
- D 30 m

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5 A radical that is equivalent to $3\sqrt{5}$ is

- A $\sqrt{15}$
- B $\sqrt{30}$
- C $\sqrt{75}$
- D $\sqrt{45}$

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6 **The range of the data set 23, 8, 17, 35, 12, 29 is**

- **A** 23
- **B** 27
- **C** 35
- **D** 12

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7 **The y-intercept of the graph of $y = 3x^2 - 2x + 8$ is**

Question 7

The y –intercept of the graph of $y = 3x^2 - 2x + 8$ is

A) –2 B) 3

C) –8 D) 8

- **A** -2
- **B** 3
- **C** -8
- **D** 8

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8 **For the line y = -3x + 7, the slope and y-intercept are**

- A Slope: -3 y-intercept: 7
- B Slope: 3 y-intercept: 7
- C Slope: -3 y-intercept: -7
- D Slope: 7 y-intercept: -3

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9 **Points are placed around a circle and every pair of points is joined by a segment. For 2, 3, 4 and 5 points, the numbers of segments are 1, 3, 6 and 10. Following the same pattern, the number of segments for 8 points is _____ Record your answer as a whole number.**

ANSWER _____

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10 **A map has a scale of 1 : 50000. Two locations that are actually 7.5 km apart are separated on the map, in centimetres, by _____**

ANSWER _____

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11 **A ray bisects an angle, splitting it into two angles measuring (5x - 6)° and (3x + 14)°. The value of x is**

- A 10
- B 4
- C 8
- D 20

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12 **A triangular sail has two sides of 12 m and 15 m with an included angle of 47°. The area of the sail, to the nearest tenth of a m², is**

- A 61.4 m²
- B 90.0 m²
- C 131.6 m²
- D 65.8 m²

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13 **A square garden has an area of 72 m². The length of one side of the garden, in simplest form, is $a\sqrt{b}$ m. The value of a + b is ____ Record your answer as a whole number.**

ANSWER _____

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14 **The population standard deviation of the data set 2, 4, 4, 6, 9, to the nearest hundredth, is _____**

ANSWER _____

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15 **The solutions to the equation $2x^2 + 3x - 2 = 0$ are**

A 2 and -0.5

B -2 and 0.5

C 2 and 0.5

D -2 and -0.5

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16 **When the system y = 3x - 2 and 2x + y = 13 is solved, the value of x is**

A 3

B 5

C 7

D 2

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17 **Reaching a general conclusion based on observations of a pattern is an example of**

A deductive reasoning

B a proof

C inductive reasoning

D a counterexample

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18 **A model car is built to a scale of 1 : 18. If the actual car is 4.5 m long, the length of the model, in centimetres, is _____**

ANSWER _____

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19 **Which of the following is NOT a valid condition for proving two triangles congruent?**

A SSS

B ASA

C AAS

D SSA

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20 From a point on the ground, the angle of elevation to the top of a tower is 30°. After walking 50 m directly toward the tower, the angle of elevation is 45°. The height of the tower, to the nearest tenth of a metre, is

- A 25.0 m
- B 50.0 m
- C 86.6 m
- D 68.3 m

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21 The simplified form of $\sqrt{75} - \sqrt{12}$ is

- A $\sqrt{63}$
- B $3\sqrt{3}$
- C $7\sqrt{3}$
- D $2\sqrt{3}$

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22 **Test scores are normally distributed with a mean of 250 and a standard deviation of 25. Approximately _____ % of the scores are below 200.**

ANSWER _____

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23 **The function $y = x^2 - 8x + 19$ written in vertex form is**

A $y = (x - 4)^2 + 3$

B $y = (x - 4)^2 - 3$

C $y = (x + 4)^2 + 3$

D $y = (x - 8)^2 + 19$

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24 **When the system 0.5x + y = 7 and x - y = 2 is solved, the solution is**

- A (4, 6)
- B (6, 4)
- C (2, 5)
- D (6, -4)

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25 **Alyssa claims that every multiple of 4 is also a multiple of 8. What is the most direct way to show that her claim is false?**

- A test the first 100 multiples of 4
- B write a general algebraic proof
- C check several multiples of 4 to see whether they work
- D give one multiple of 4, such as 12, that is not a multiple of 8

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26 The exchange rate is 1 USD = 1.36 CAD. The cost, in Canadian dollars, to the nearest cent, of an item priced at $92 USD is _____

ANSWER _____

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27 An exterior angle of a triangle measures (4x)°. The two non-adjacent interior angles measure 35° and (2x + 5)°. The value of x is ____. Record your answer as a whole number.

ANSWER _____

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28 Triangle ABC is shown. BC = 30 cm, and angle B measures 67°. The length of the side opposite angle B, to the nearest tenth of a centimetre, is

A 27.6 cm

B 11.7 cm

C 32.6 cm

D 70.7 cm

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29 The simplified form of $\sqrt{32}$ is

- A $8\sqrt{2}$
- B $4\sqrt{2}$
- C $2\sqrt{8}$
- D $\sqrt{30}$

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30 In a class of 30 students, Jordan's science mark is higher than the marks of 24 of the students. Jordan's mark is approximately in the

- A 20th percentile
- B 24th percentile
- C 80th percentile
- D 96th percentile

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31 **A theatre sells 200 tickets at a price of 10 dollars per ticket. For each increase of 1 dollar in price, 10 fewer tickets are sold. The ticket price, in dollars, that gives the maximum revenue is _____ Record your answer as a whole number.**

ANSWER _____

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32 **The slope of the line through the points (-1, 4) and (3, -2) is**

A $\frac{3}{2}$

B -2/3

C $\frac{2}{3}$

D -3/2

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33 The terms of a pattern are 20, 17, 14, 11, … The next term is

- A 10
- B 9
- C 7
- D 8

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34 Five notebooks cost $7.50. The cost of one notebook is

- A $1.50
- B $2.50
- C $37.50
- D $0.67

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35 **Triangle ABC is shown. Angle B measures 58°. The measure of angle C is**

- A 122°
- B 32°
- C 58°
- D 90°

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36 **Two sides of a triangle are 10 cm and 14 cm, and the angle between them is 63°. The length of the third side, to the nearest tenth of a centimetre, is**

- A 13.0 cm
- B 17.2 cm
- C 20.6 cm
- D 11.4 cm

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37 The simplified form of $\sqrt{27} - \sqrt{3}$ is

- A $2\sqrt{3}$
- B $\sqrt{24}$
- C $3\sqrt{3}$
- D $4\sqrt{3}$

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38 In a course, homework is worth 20% of the final grade and tests are worth 80%. A student earns 90% on homework and 75% on tests. The student's final grade is

- A 82.5%
- B 80%
- C 78%
- D 76%

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39 The x-intercepts of the graph of y = (x + 1)(x - 7) are

Question 39

The x –intercepts of the graph of $y = (x + 1)(x - 7)$ are

A) 1 and -7

B) -1 and 7

C) 1 and 7

D) -1 and -7

A 1 and -7

B -1 and 7

C 1 and 7

D -1 and -7

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Flag a mistake

40 **The slope of the line through the points (2, -3) and (-4, 3) is**

A 1

B -1

C -6

D 6

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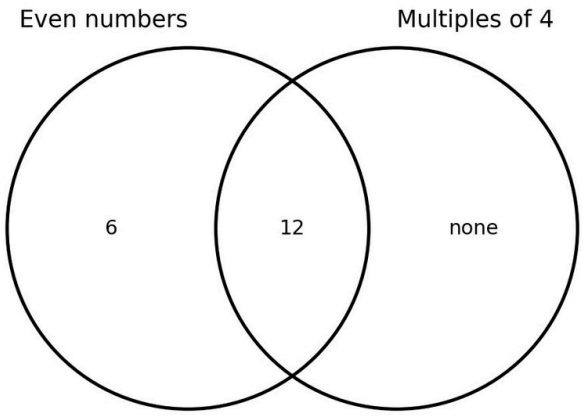
41

The Venn diagram shows even numbers and multiples of 4. Which statement about the numbers shown is true?



Question 41

The Venn diagram shows even numbers and multiples of 4. Which statement about the numbers shown is true?

A) 6 is a multiple of 4

B) 12 is even but is not a multiple of 4

C) 6 is even but is not a multiple of 4

D) Every even number shown is a multiple of 4

A 6 is a multiple of 4

B 12 is even but is not a multiple of 4

C 6 is even but is not a multiple of 4

D Every even number shown is a multiple of 4

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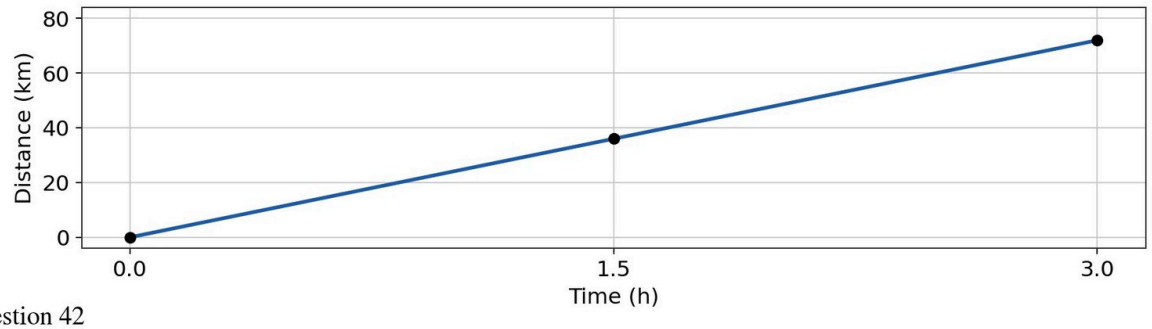
42 **The graph shows distance against time for a cyclist travelling at a constant speed. The distance the cyclist travels in 2.5 h is**



Question 42

The graph shows distance against time for a cyclist travelling at a constant speed. The distance the cyclist travels in 2.5 h is

A) 54 km

B) 60 km

C) 90 km

D) 40 km

A 54 km

B 60 km

C 90 km

D 40 km

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43 **A ray bisects an angle into two parts measuring (2x + 8)° and (4x - 10)°. The measure of the full angle is**

A 26°

B 44°

C 62°

D 52°

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44 **A triangular garden plot has two sides of 8 m and 11 m meeting at an angle of 95°. The length of the third side, to the nearest tenth of a metre, is**

Question 44

A triangular garden plot has two sides of 8 m and 11 m meeting at an angle of 95°. The length of the third side, to the nearest tenth of a metre, is

A) 13.0 m

B) 13.6 m

C) 14.2 m

D) 19.0 m

- **A** 13.0 m
- **B** 13.6 m
- **C** 14.2 m
- **D** 19.0 m

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45 **When $\sqrt{98} + \sqrt{50}$ is simplified, the result is written as $a\sqrt{2}$. The value of a is ____ Record your answer as a whole number.**

ANSWER

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46 **Rosa's mark is in the 25th percentile of her class. This means that**

A Rosa scored in the top 25% of her class

B 25% of the scores are less than or equal to Rosa's mark

C Rosa's mark was 25%

D Rosa scored higher than 75% of her class

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47 **The smaller solution to the equation $2x^2 - 11x + 5 = 0$ is _____ Record your answer as a decimal.**

ANSWER _____

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48 **The sum of two numbers is 32. Twice the first number plus the second number is 46. The first number is ____**

ANSWER _____

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49 **Which of the following completes a valid deductive proof that the product of two even integers is always even?**

- **A** Since 4 × 6 = 24 and 2 × 8 = 16 are even, the product of two even integers is always even.
- **B** The sum of two even integers is even, so their product must be even as well.
- **C** Even integers end in 0, 2, 4, 6 or 8, so multiplying them gives an even result.
- **D** Let the integers be 2m and 2n. Their product is 4mn = 2(2mn), which is a multiple of 2, so the product is even.

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50 **Two cities that are 240 km apart are 8 cm apart on a map. The scale of the map is**

- **A** 1 cm : 3 km
- **B** 1 cm : 240 km
- **C** 1 cm : 30 km
- **D** 1 cm : 1920 km

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ANSWER KEY

1.	C	**18.**	25	**35.**	B
2.	C	**19.**	D	**36.**	A
3.	A	**20.**	D	**37.**	A
4.	C	**21.**	B	**38.**	C
5.	D	**22.**	2.5	**39.**	B
6.	B	**23.**	A	**40.**	B
7.	D	**24.**	B	**41.**	C
8.	A	**25.**	D	**42.**	B
9.	28	**26.**	125.12	**43.**	D
10.	15	**27.**	20	**44.**	C
11.	A	**28.**	A	**45.**	12
12.	D	**29.**	B	**46.**	B
13.	8	**30.**	C	**47.**	0.5
14.	2.37	**31.**	15	**48.**	14
15.	B	**32.**	D	**49.**	D
16.	A	**33.**	D	**50.**	C
17.	C	**34.**	A		

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