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| **High School** | |
| **Yearly Examination 2012** | |
| **Year 10**  **Mathematics Course** | |
| **General Instructions**   * Reading time: 5 minutes * Working time: 2 hours * There will be a short break between Section 1 and Section 2 * Write using black or blue pen * You may use a pencil to draw or complete diagrams * Attempt ALL questions * Approved calculators may be used in Section 2. * Write your Name and Teacher’s Name in the spaces provided. * A formula Sheet is on the reverse of this page and can be detached and used in all sections of the test. | **Total Marks – 100**  **Section 1**  Non Calculator Section.  **25 marks**  Time allowed for this section is 30 minutes.  Write all answers in the spaces provided.  **Section 2**  Time allowed for this section is 1 hour and 30 minutes.  **Part A**  Multiple Choice Section.  Mark your answers on the separate answer sheet at the end of the examination.  **50 marks**  **Part B**  Longer Answer Section.  Write all answers in the spaces provided.  **25 marks** |

Formula Sheet

**Pythagoras’ Theorem**



*c* = hypotenuse

*a* and *b* are the shorter sides

**Circumference of a circle**



*d* = diameter

**Area of a circle**



*r* = radius

**Area of a parallelogram**



*b* = base

*h* = perpendicular height

**Area of a rhombus or kite**



*x* and *y* are the diagonals

**Area of a trapezium**



*h* = perpendicular height

*a* and *b* are the parallel sides

**Volume of a prism**



*A* = area of base

*h* = perpendicular height

**Volume of a pyramid**



*A* = area of base

*h* = perpendicular height

**Volume of a cylinder**



*r* = radius

*h* = perpendicular height

**Volume of a cone**



**Volume of a sphere**



**Surface Area of a Cylinder**



**Surface Area of Cone**



*r* = radius

*l* = slant height

**Surface Area of a sphere**



**Trigonometric Ratios**

**Sine**



**Cosine**



**Tangent**



**Simple interest**



*P* = Principal

*R* = interest rate per time period as a decimal

*T* = number of time periods

**Compound Interest**



*A =* Final amount to which the investment grows

*P* = Principal

*r* = interest rate per compounding period as a decimal

*n* = number of compounding periods

**Depreciation**



*SV =* Salvage Value to which the initial value falls

*IV* = Initial Value

*r* = depreciation rate per compounding period as a decimal

*n* = number of compounding periods

**Gradient of a line**



 and  are 2points on the line

*m* = gradient

**Midpoint of a line segment**



**Length of a line segment**



**Equation of a line**



or



*b* = *y* intercept

Yearly Examination 2012

**Mathematics**

Class/Teacher \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Section 1**

**25 marks**

Time allowed for this section is 30 minutes

Answer Questions 1–25 in the spaces provided.

Calculators are **NOT** to be used in this section.

There will be a short break between Section 1 and Section 2.

|  |  |
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| **Section 1** Non Calculator Section | |
|  | Write all working and answers in the spaces provided on this test paper. |
| 1. | ……………………………………………………………………………………………………..  …………………………………………………………………………………………………….. |
| 2. | Write the next two lines in this pattern:    ……………………………………………………………………………………………………..  …………………………………………………………………………………………………….. |
| 3. | Add  ……………………………………………………………………………………………………..  …………………………………………………………………………………………………….. |
| 4. | Write 78 500 000 in Standard Notation (Scientific Notation).  ……………………………………………………………………………………………………..  …………………………………………………………………………………………………….. |
| 5. | Mickey worked a 7½ hour day on Sunday and was paid double time rates. If his normal hourly rate is $23.40, what did he earn on Sunday?  ……………………………………………………………………………………………………..  …………………………………………………………………………………………………….. |
| 6. | Write  as a recurring decimal.  ……………………………………………………………………………………………………..  …………………………………………………………………………………………………….. |
| 7. | There were 240 cars in the Minex staff carpark last Wednesday.  The ratio of cars to bikes in the carpark on Wednesday was 12: 5.  How many bikes were in the carpark?  ……………………………………………………………………………………………………..  …………………………………………………………………………………………………….. |
| 8. | An overnight bag, originally priced at $105 is offered at a discount of 40%. What is the selling price after the discount is applied?  ……………………………………………………………………………………………………..  …………………………………………………………………………………………………….. |
| 9. | Saskia makes 40 muffins for a birthday party and she ices 16 of them.  What percentage of her muffins are iced?  ……………………………………………………………………………………………………..  …………………………………………………………………………………………………….. |
|  | Questions 10 and 11 refer to the diagram below where matchsticks have been used to make the first 3 steps in a pattern.        *Step 1 Step 2* *Step 3*  5 matches 12 matches 19 matches |
| 10. | How many matches would be needed to make step 6 of the pattern?  ……………………………………………………………………………………………………..  …………………………………………………………………………………………………….. |
| 11. | Write a formula for **N**, the number of matches that would be needed to make step ***s*** of the pattern.  ……………………………………………………………………………………………………..  ……………………………………………………………………………………………………. |
| 12. | Expand and simplify the expression  ……………………………………………………………………………………………………..  ……………………………………………………………………………………………………. |
| 13. | Find the value of *x*, if .  ……………………………………………………………………………………………………..  …………………………………………………………………………………………………….  ……………………………………………………………………………………………………..  ……………………………………………………………………………………………………. |
| 14. | Draw the graph of the relation  on the number plane provided.  ……………………………………  ……………………………………  ……………………………………  ……………………………………  …………………………………… |
| 15. | Simplify  .  ……………………………………………………………………………………………………..  ……………………………………………………………………………………………………. |
| 16. | What is the gradient of the line joining the points A(-2, 8) and B(1, 2) on the number plane?  ……………………………………  ……………………………………  ……………………………………  ……………………………………  …………………………………… |
|  | Questions 17 and 18 refer to the table and the incomplete sector graph shown below, which give the results of a music magazine poll on favourite heavy metal bands. Two bands are still to be added to the graph.  Chrome Attack   |  |  | | --- | --- | | Name | Number  of Votes | | Chrome Attack | 12 | | Deaf Metal | 30 | | Kings of the Iron Age | 40 | | Metal as Anything | 18 | | Thrash and Trash | 20 | | Ferrica | 45 | | Led Butterfly | 15 |   Deaf Metal  Kings of the Iron Age  Metal as Anything  Thrash and Trash |
| 17. | Name a band which has a sector which measures 36o.  ……………………………………………………………………………………………………. |
| 18. | Complete the graph above to include the two missing bands. |
|  | Questions 19 and 20 refer to the following information.  A car dealership records the numbers of cars it sells each day for the month of January.  The results are shown on the dot plot.   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  | O |  |  |  |  | |  |  | O |  | O |  |  |  |  | |  |  | O |  | O | O |  |  |  | |  | O | O |  | O | O | O |  |  | |  | O | O | O | O | O | O |  |  | | O | O | O | O | O | O | O |  | O | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |   Number of Cars Sold per Day |
| 19. | What was the mean number of cars sold per day (correct to one decimal place)?  ……………………………………………………………………………………………………..  ……………………………………………………………………………………………………. |
| 20. | What was the interquartile range for the number of cars sold per day?  ……………………………………………………………………………………………………..  ……………………………………………………………………………………………………. |
| 21. | A train is scheduled to leave Gosnels at 3:20 pm.  It normally takes 2 hours and 45 minutes to get to Glenelg.  Last Tuesday it was a quarter of an hour late leaving Gosnels and the trip to Glenelg took 12 minutes longer than normal due to track-work.  What time did it arrive at Gosnels last Tuesday?  ……………………………………………………………………………………………………..  ……………………………………………………………………………………………………. |
| 22. | A wall in a restaurant is in the shape of a trapezium with a square window cut into it as shown.  The diagonals of the square window measure 1 metre.  The wall is to be painted. What area requires painting?    ……………………………………………………………………………………………………..  ……………………………………………………………………………………………………. |
| 23. | Find the surface area of the triangular prism shown below.    ……………………………………………………………………………………………………..  ……………………………………………………………………………………………………. |
| 24. | A, B and C are three points on a map.  D is a point which is equidistant from points A and B and is due west of point C.  Use a ruler and compass to show the position of point D. |
| 25. | ABCD is a parallelogram. E is a point on the side BC of the parallelogram.    Find the value of *x*.    ……………………………………………………………………………………………………..  ……………………………………………………………………………………………………. |

Yearly Examination 2012

**Mathematics**

**Section 2**

**75 marks**

Time allowed for this section is

1 hour and 30 minutes

This section has TWO parts

Part A – Fifty multiple-choice questions worth 1 mark each.

Mark your answers on the separate answer sheet provided at the end of the examination.

Part B – Five longer answer questions worth a total of 25 marks.

Write all answers and working in the spaces provided on this examination paper.

Calculators may be used in this section.

Do not commence Section 2 until you are instructed to do so.

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| **Section 2**  **Part A**  Multiple Choice Section | |
|  | Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section. |
|  | Tayla is a salesperson who is paid a $250 per week retainer, plus a commission of 3% of her sales. What would she be paid in a week where her sales were $20 000?   1. $60 B. $310 C. $600 D. $850 |
|  | Ned sold a bike for $600.  This was a profit of 25% on his cost price.  What was the cost price?   1. $400 B. $480 C. $520 D. $750 |
|  | The distance of Mars from the sun is  This could also be written as:   1. 0.227 9 million km B. 2.279 million km   C. 22.79 million km D. 227.9 million km |
|  | What number is halfway between on the number line?    A.  B.  C.  D. |
|  | Which of the following is not equal to   1. B.  C.  D. |
|  | Martha works as a clerical assistant and is paid a salary of $ 53 081.60. What is her pay if she receives it fortnightly?  A. $520.80 B. $2 295.05 C. $2 041.60 D. $5 083.20 |
|  | The Weather Bureau predicts a 30% chance of rain tomorrow. Which fraction represents the probability that it won’t rain?  A.  B.  C.  D. |
|  | A parking lot has 36 parking spaces.  Five of the spaces are reserved for staff and six are reserved for accessible parking.  Kurt drives into the empty parking lot in a hurry and parks at random in any car space.  What is the probability that it is a space reserved for staff?  A.  B.  C.  D. |
|  | The expression  could represent:  A. The number of cents is equal to 10 times the number of dollars.  B. The number of dollars is equal to 100 times the number of cents.  C. The number of dollars is equal to 10 times the number of cents.  D. The number of cents is equal to 100 times the number of dollars. |
|  | Which line in the solution to the equation  contains an error?    Line 1  Line 2  Line 3  Line 4  A. Line 1 B. Line 2 C. Line 3 D. Line 4 |
|  | The fraction  simplifies to:  A.  B.  C.  D. |
|  | Which is the graph of the line ?     1. B.     C. D. |
|  | What is the distance between the points C(-7, 5) and D(8, -3)?  A. 13 units  B. 15 units  C. 17 units  D. 23 units. |
|  | Questions 14 – 15 refer to the line graph which shows the temperature at Milltown over a period of 24 hours.    12 2 4 6 8 10 12 2 4 6 8 10 12  am pm  Time |
|  | At what times is the temperature 15o?   1. 8 am and 7 pm B. 9 am and 7 pm   C. 8 am and 9 pm D. 9 am and 9 pm |
|  | For how many hours is the temperature above 17o?   1. 6½ hours B. 7½ hours C. 8½ hours D. 9½ hours |
|  | Erin and Jess compare the number of points they scored in 10 games of netball.  Erin 5, 7, 10, 9, 8, 8, 7, 12, 9, 7  Jess 12, 14, 13, 7, 13, 13, 4, 8, 10, 3  Which is true?  A. Jess has a greater mode and a greater range.  B. Jess has a greater mode, but Erin has a greater range.  C. Erin has a greater mode and a greater range.  D. Erin has a greater mode, but Jess has a greater range. |
|  | The results of a quiz are shown on the frequency distribution table below.  What is the median of the scores (correct to one decimal place)?  A. 3.0 B. 5.0 C. 5.5 D. 5.6 |
|  | Find the length of *KL* in the triangle below, correct to one decimal place.    A. 6.9 m  B. 14.7 m  C. 20.7 m  D. 29.4 m |
|  | A cylindrical water tank has the dimensions shown. What is the volume of the tank to the nearest cubic metre?  A. 23 m3  B. 36 m3  C. 43 m3  D. 174 m3 |
|  | Find the area of this field to the nearest m2.    A. 420 m2  B. 600 m2  C. 660 m2  D. 840 m2 |
|  | Find the value of, correct to the nearest degree.  A. 35o     1. 44o   C. 46o  D. 55o |
|  | Which of the following is not true of an obtuse isosceles triangle?  A. All the angles are obtuse.  B. The angle sum is 180o.  C. There are two equal sides.  D. There are two equal angles. |
|  | What is the value of *y* in the diagram?  A. 18o  B. 42o  C. 54o  D. 126o |
|  | In the quadrilateral ABCD, .  What is the size of .  A. 83o  B. 97o  C. 166o  D. 194o |
|  | *ABCD* and *A’B’C’D’*  are congruent quadrilaterals. Which statement is not necessarily true?   1. The areas are the same. 2. The matching angles are equal. 3. The matching sides are equal. 4. The matching sides are parallel. |
|  | Matty is paid normal rates of $32.00 per hour for an 8 hour day, time and a half for the first 4 hours overtime and double time after that. What would he be paid for a 14 hour day?  A. $448 B. $544 C. $560 D. $576 |
|  | The ratio 900 mL : 1.2 L in simplest form is;   1. 3 : 4 B. 3 : 400 C. 3 : 40 D. 30 : 4 |
|  | A car uses fuel at a rate of 12 L/100 km. What is the rate in mL/km?   1. 1.2 mL/km B. 12 mL/km C. 120 mL/km D. 1 200 mL/km |
|  | Which calculation would you use to find the interest on $11 000 invested at 8% p.a. interest compounding quarterly for two years.  A.  B.  C.  D. |
|  | 8.7481 when rounded correct to 3 significant figures is:  A. 8.7 B. 8.74 C. 8.75 D. 8.748 |
|  | Marta buys a laptop for $3 200.00. It depreciates at a rate of 12% pa compounding annually. What is the value of the laptop after four years?  A. $1 536.00 B. $1 919.03 C. $2 180.71 D. $2 816.00 |
|  | A game show has four teams which compete each week, with one team winning the weekly prize. Their results over the last 25 weeks are shown.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Team | Crocs | Skinks | Goannas | Frillnecks | | Number of Wins | 4 | 8 | 7 | 6 |   Based on the previous results, what is the probability that the Crocs will win the 26th game?  A.  B.  C.  D. |
|  | In a game Marcus draws a marble from a bag containing twenty red, fifteen white, ten green and five blue marbles.  What is the probability that the marble is neither blue nor green?  A.  B.  C.  D. |
|  | A.  B.  C.  D. |
|  | If  then:  A.  B.  C.  D. |
|  | The points *P* (-2, -8) and *Q* (1, 1) lie on the line l shown.  The equation of the line l, is:  A.  B.  C.  D. |
|  | Which equation could describe the graph shown?  A.  B.  C.  D. |
|  | As liquid is poured into a container at a constant rate, the level of liquid in the container rises. The graph at right shows the rise in the level over time.  Which container was being filled?  A. B.    C. D. |
|  | The grouped frequency distribution gives the hours spent on completing a class project.   |  |  |  |  | | --- | --- | --- | --- | | Class | Class Centre *x* | Frequency *f* | *fx* | | 1 – 6 | 3.5 | 4 |  | | 7 – 12 | 9.5 | 6 |  | | 13 – 18 | 15.5 | 8 |  | | 19 – 24 | 21.5 | 2 |  | |  |  |  |  |   What was the approximate mean time spent on completing the project?  A. 4 B. 5 C. 11.5 D. 11.9 |
| **Questions 40 - 42 refer to the following.**  Angela collects data on the number of hours spent training by the members of an athletics squad. The results are shown on the stem and leaf plot.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Stem | Leaf | | | | | | 2 | 9 |  |  |  |  | | 3 | 5 | 8 |  |  |  | | 4 | 2 | 3 | 3 | 5 |  | | 5 | 3 | 5 | 5 | 5 | 8 | | 6 | 1 | 3 | 4 |  |  | |  |  |  |  |  |  | | |
|  | What is the modal time spent on training?  A. 35 B. 42 C. 49 D. 55 |
|  | What is the interquartile range of the times spent?  A. 16 B. 42 C. 53 D. 58 |
|  | What is the standard deviation of the training times?  A. 10.4 B. 11 C. 35 D. 53 |
|  | What is the area of the sector of a circle shown, (correct to the nearest cm2)?  A. 101 cm2  B. 134 cm2  C. 268 cm2  D. 804 cm2 |
|  | What is the volume of the sphere?  A. 1 810 cm3  B. 7 238 cm3  C. 57 906 cm3  D. 463 247 cm3 |
|  | A plane flies due north from Georgetown (G) for 450km to Harrow (H). It then turns and flies due east for a distance of 240 km to Indira (I). What is the bearing of Georgetown from Indira?  A. 062o  B. 152o  C. 208o  D. 242o |
|  | A cylindrical pipe is installed as part of a skate park.  The outside curved surface only is to be painted.  The chosen paint covers 20 m2 per can.  What is the least number of cans that are needed to paint the outside of the pipe?  A. 3 B. 4 C. 5 D. 6 |
|  | Which is true?    A. *m* = 24o  B. *m* = 80o  C. *m* = 100o  *D. m* = 128o |
|  | In , *WX =YX* and *M* is the midpoint of *WY*.  Which of the congruence tests could be used to show that .  A. AAS B. RHS C. SAS D. SSS |
|  | The figure shows a regular octagon with an exterior angle  drawn.  What is the size of the exterior angle?  A. 35o  B. 45o  C. 55o  D. 60o |
|  | AC = 16 cm, CE = 2 cm and CB = 8 cm.  What is the length of ED?  A. 1 cm.  B. 9 cm.  C. 10 cm.  D. 12 cm. |

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| **Section 2**  **Part B**  Longer Answer Section | | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| Class/Teacher\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
|  | Write all working and answers in the spaces provided on this examination paper.  Calculators are allowed for this section. | | |
|  |  | | **Marks** |
| 1. | 1. Marley is a member of a games website where he receives a 20% discount on any game that he buys.   During a sale the site offers a further 10% discount on the *Yashi Monsters* game.  What would Marley pay for the *Yashi Monsters* game during the sale if its normal price is $56.00?  ………………………………………………………………………………………………  ………………………………………………………………………………………………  ……………………………………………………………………………………………… | | **2** |
| 1. Australia defeated Canada in the final of the Wheelchair Rugby at the Paralympics by a score of 66-51 with Riley Batt scoring 39 of the team’s points.   What is the ratio of points scored by Riley to the points scored by all the other players on both teams (in simplest form)?  ………………………………………………………………………………………………  ………………………………………………………………………………………………  ……………………………………………………………………………………………… | | **1** |
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|  |  | **Marks** |
| 2. | a) Karl records the points scored by his favourite football team, *The Marlins* over a season.  The results are shown below   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 12 | 20 | 13 | 0 | 30 | 21 | 13 | 14 | | 45 | 47 | 23 | 32 | 15 | 24 | 2 | 36 | | 26 | 48 | 26 | 18 | 19 | 8 | 9 | 19 |   Record the data in a stem and leaf plot.   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Stem | Leaves | | | | | | | | | 0 |  |  |  |  |  |  |  |  | | 1 |  |  |  |  |  |  |  |  | | 2 |  |  |  |  |  |  |  |  | | 3 |  |  |  |  |  |  |  |  | | 4 |  |  |  |  |  |  |  |  | | **2** |
| b) Jack records the points scored by *The Saracens*, but only over the last 12 games..  The results were 4, 12, 14, 16, 18, 23, 30, 31, 33, 45, 46, 51  Find the mean of the points scored by *The Saracens* in these 12 games.    ………………………………………………………………………………………………  ………………………………………………………………………………………………  ……………………………………………………………………………………………… | **1** |
| (c) Find the interquartile range of the points scored by *The Saracens* in these 12 games.  ………………………………………………………………………………………………  ………………………………………………………………………………………………  ……………………………………………………………………………………………… | **2** |

|  |  |  |
| --- | --- | --- |
|  |  | **Marks** |
| 3. | (a) A machinery shed is to be built in the shape of the trapezoidal prism shown below.     1. What is the area of the shaded trapezium marked as A?   ………………………………………………………………………………………………  ………………………………………………………………………………………………   1. What is the volume of the shed (to the nearest cubic metre)?     ………………………………………………………………………………………………  ………………………………………………………………………………………………   1. Find the distance marked *x* and hence find the total area of the four walls and the roof of the shed.     ………………………………………………………………………………………………  ……………………………………………………………………………………………… | **4** |
| (b) The ship *Kestrel* (K) is at a point 120 km due south of Lareto Island (L) and 170 km due west of Marris Island (M).  Mark the information above on the diagram provided, and calculate the bearing of Marris Island from Lareto Island.    ………………………………………………………………………………………………  ………………………………………………………………………………………………  ………………………………………………………………………………………………  ……………………………………………………………………………………………… | **3** |

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| --- | --- | --- |
|  |  | **Marks** |
| 4. | The line segments *QP* and *TS* are parallel and unequal in length.  *QS* and *PT* are joined. *QP* = 20 cm, *PR* = 12 cm and *RT* = 9 cm.     1. Determine (giving reasons) the size of  .     ………………………………………………………………………………………………  ………………………………………………………………………………………………   1. Show, giving reasons, that .     ………………………………………………………………………………………………  ………………………………………………………………………………………………  ………………………………………………………………………………………………  (iii) Calculate the length of *TS*  .  ………………………………………………………………………………………………  ………………………………………………………………………………………………  ……………………………………………………………………………………………… | **4** |

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| --- | --- | --- |
|  |  | **Marks** |
| 5. | a) Evaluate  .    ………………………………………………………………………………………………  ………………………………………………………………………………………………  ……………………………………………………………………………………………… | **1** |
| b) Solve the equation    ………………………………………………………………………………………………  ………………………………………………………………………………………………  ………………………………………………………………………………………………    ……………………………………………………………………………………………… | **2** |
|  | c) (i) Find the coordinates of the midpoint M of the line segment AB, joining A (5, -5) and B (-2, 9).    ………………………………………………………………………………………………  ………………………………………………………………………………………………  (ii) Find the equation of the line AB.  ………………………………………………………………………………………………    ………………………………………………………………………………………………  ………………………………………………………………………………………………    ………………………………………………………………………………………………  ……………………………………………………………………………………………… | **3** |
|  | **End of Examination** |  |

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High School

Year 10 Yearly Exam 2012

Mathematics Course

Multiple Choice Section Answer Sheet

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Teacher \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

11. A B C D

12. A B C D

13. A B C D

14. A B C D

15. A B C D

16. A B C D

17. A B C D

18. A B C D

19. A B C D

20. A B C D

21. A B C D

22. A B C D

23. A B C D

24. A B C D

25. A B C D

26. A B C D

27. A B C D

28. A B C D

29. A B C D

30. A B C D

31. A B C D

32. A B C D

33. A B C D

34. A B C D

35. A B C D

36. A B C D

37. A B C D

38. A B C D

39. A B C D

40. A B C D

41. A B C D

42. A B C D

43. A B C D

44. A B C D

45. A B C D

46. A B C D

47. A B C D

48. A B C D

49. A B C D

50. A B C D