

MathLinks 9 Practice Final Exam

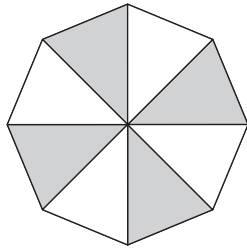
For each multiple choice question, circle the correct letter. For each numerical response question, record your answer in the space provided.

Shopping Malls

Some large shopping malls have amusement parks and/or movie theatres, as well as stores, restaurants, and offices. Use your math skills to solve questions related to shopping malls.

Use this information to answer #1 to 2.

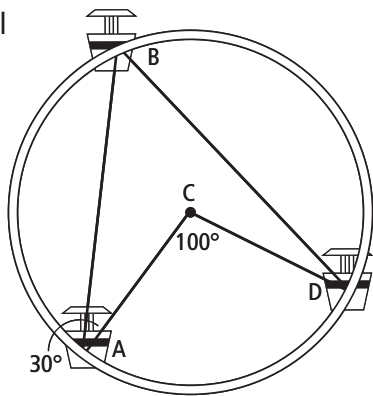
This is part of a game at an amusement park.



1. What is the order of rotational symmetry?
A 8 B 6 C 4 D 2
2. What is the angle of rotation?
A 45° B 90° C 120° D 180°

Use this information to answer #3.

A Ferris wheel has braces AB, AC, DC, and DB.

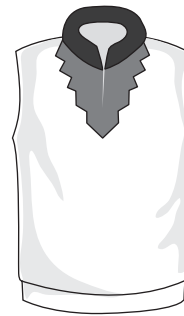


3. What is the measure of the inscribed angle?

A 30° B 50° C 100° D 200°

Use this information to answer #4.

This vest is in a clothing store window.



Numerical Response

4. How many lines of symmetry are there in the front of this vest?

Use this information to answer #5.

The skill-testing question on a ballot for a free shopping spree is $(6 - 1)^3 + 64 \div (-2)^3$.

5. What is the answer to the skill-testing question?

A -9 B 7 C 117 D 133

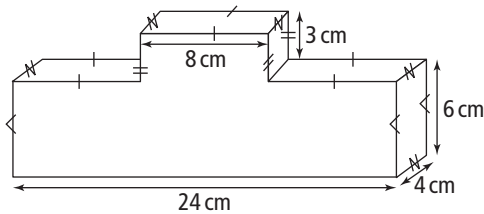
Use this information to answer #6.

A clothing store made a profit of \$1.3 million in its first year, lost \$400 000 in the second year, and lost \$300 000 in the third year.

6. What was the average profit (+) or loss (–) over the three years?
- A +\$200 000 B +\$600 000
 C –\$200 000 D –\$600 000

Use this information to answer #7.

This tiered stand is covered with velvet to display jewellery.



7. What is the surface area of velvet on the exposed faces (all except the base)?
- A 348 cm^2 B 444 cm^2
 C 504 cm^2 D 800 cm^2

Use this information to answer #8 to 10.

Waiters at a restaurant are paid \$8.00 per shift and \$11.25 per hour.

8. Which table of values represents the total wages a waiter is paid in the first 5 h of a shift?

A.

Hours Worked, h	Total Wages, w (\$)
1	11.25
2	19.75
3	30.50
4	41.75
5	53.00

B.

Hours Worked, h	Total Wages, w (\$)
1	19.25
2	38.50
3	57.75
4	77.00
5	96.25

C.

Hours Worked, h	Total Wages, w (\$)
1	19.25
2	22.50
3	33.75
4	45.00
5	56.25

D.

Hours Worked, h	Total Wages, w (\$)
1	19.25
2	30.50
3	41.75
4	53.00
5	64.25

9. Which of the following would be used to determine the total wages for 3.5 h of work?
- A interpolation B extrapolation
C simulation D assumption
10. An equation is written for the total wages for any number of hours within one shift. Which of the following represents the amount paid per shift?
- A constant
B variable
C numerical coefficient
D linear equation

Use this information to answer #11 to 12.

A poster displaying a pair of shoes uses a scale of 1:4. The length of a shoe on the poster is 6.5 cm.

11. What is the actual length of the shoe?
- A 32.5 cm B 26.0 cm
C 24.0 cm D 10.5 cm

Numerical Response

12. What is the scale factor of the reduction?

Use this information to answer #13.

Every tenth person who makes a purchase at a store is asked a survey question.

13. The type of sampling used is best described as
- A random B convenience
C systematic D stratified

Use this information to answer #14.

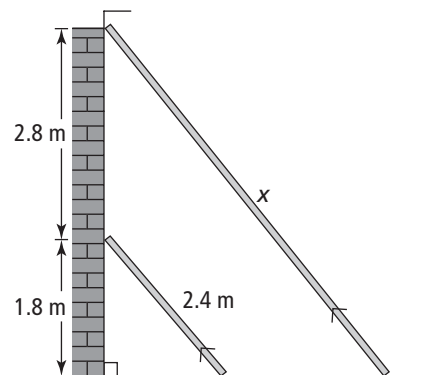
A shoe salesperson who earns \$2.50 per pair of shoes sold needs to earn at least \$45.00 per shift.

Numerical Response

14. What is the least number of pairs of shoes that the salesperson needs to sell?

Use this information to answer #15.

A longer ladder is needed to hang decorations from the top of the wall in the mall. The length of the ladder needed is x .



15. Which length of ladder to the nearest metre is needed?
- A 4 m B 5 m C 6 m D 7 m

Use this information to answer #16.

A membership at a movie rental store costs \$35.00/year. Movie rentals are \$4.00 with a membership and \$6.95 without a membership.

Numerical Response

16. What is the least number of movies that would need to be rented in a year to make buying a membership worthwhile?

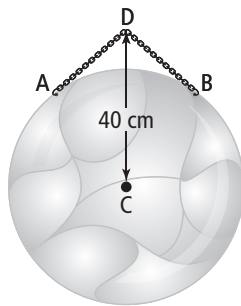
Use this information to answer #17.

A square in the mall has side lengths $2.8x$. An equilateral triangle-shaped water feature with an area of $2.2x^2$ is being cut out of the centre of the square.

17. Which is the remaining area of the square?
- A $0.6x$ B $0.6x^2$
 C $5.64x$ D $5.64x^2$

Use this information to answer #18.

The diameter of the stained-glass hanging for sale is 60 cm. A chain is attached at A and B so that AD and BD are tangent to the circle.



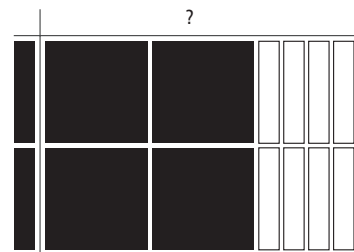
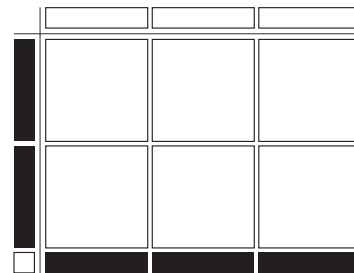
18. Which is the total length of the chain, to the nearest centimetre?
- A 27 cm B 32 cm
 C 53 cm D 64 cm

Connections

Many concepts that you study in mathematics are related and can help you solve a variety of problems. Connect the skills and concepts you have learned to solve the following problems.

Use this information to answer #19 to 20.

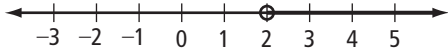
These algebra tiles model polynomial multiplication and division. Shaded tiles are positive and white tiles are negative.



19. Which multiplication statement is modelled by the top tile arrangement?
- A $(3x)(-2x + 1) = -6x^2 + 3x$
 B $(-3x)(2x - 1) = -6x^2 + 3x$
 C $(-3x)(2x + 1) = -6x^2 - 3x$
 D $(3x)(-2x - 1) = -6x^2 - 3x$
20. Which is the quotient of the division modelled by the bottom tile arrangement?
- A $-2x - 4$ B $-2x + 4$
 C $2x + 4$ D $2x - 4$

Use this information to answer #21

This number line is a solution to an inequality.



21. For which inequality is the number line the solution?
- A $2x + 5 \geq 9$
 B $-2(x - 7) < 10$
 C $\frac{x}{3} + 6 < 4$
 D $6x + 8 < 4x + 12$
22. Which is an influencing factor when collecting data?
- A ethics B bias
 C cost D all of them
23. Which equation has a solution of $x = 4$?
- A $\frac{x}{2} + 1 = \frac{3}{4}$
 B $\frac{-5.2}{x} = -1.3$
 C $\frac{2x - 1}{4} = \frac{5x - 6}{4}$
 D $1.2(4x + 6) = 8.4$

Use this information to answer #24.

A square has side length $4a + 0.2$.
 An equilateral triangle has side length $3a + 2.6$. They have the same perimeter.

24. The value for a is
- A 1.0 B 2.0 C 2.4 D 3.4

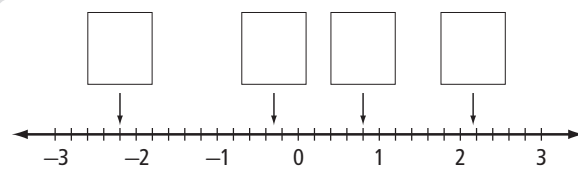
Use this information to answer #25

These algebra tiles model two polynomials that are to be added



25. What is the sum?
- A $4x^2 - 4x + 5$
 B $-2x^2 - 2x + 5$
 C $-4x^2 + 4x - 5$
 D $2x^2 + 2x - 5$
26. Which polynomial is not of degree 2?
- A $4 + 2x$ B $xy - 2$
 C $x^2 + 3$ D $x^2 + xy - 1$

Use this information to answer #27



These values go in the boxes:

$$\frac{3}{4}, -0.3, -2\frac{1}{4}, 2\frac{1}{8}$$

Numerical Response

27. Write the numbers in the correct order from left to right.

Use this information to answer #28

$$\begin{array}{ll} x + y + 5 & x^2 + 2 \\ 3x^2 - 4x + 1 & xy + x + 2 \end{array}$$

28. Except $x^2 + 2$, all of the expressions are best described as

- A** polynomials **B** monomials
C binomials **D** trinomials

29. A bacterium triples every 20 min. If there are 35 bacteria present to start, how many will be present in 3 h?

- A** 945 **B** 2835
C 25 515 **D** 688 905

30. What is the value of $2 \times \left(\frac{3}{4}\right)^3$?

- A** $\frac{18}{12}$ **B** $\frac{27}{32}$ **C** $\frac{27}{64}$ **D** $\frac{18}{128}$

31. Which value is the best estimate for the side length of a square with an area of 6.4 cm^2 ?

- A** 0.8 cm **B** 2.5 cm
C 3.2 cm **D** 12.8 cm

Show your work for #32 to 36 on a separate paper. You will also need one sheet of grid paper.

Use this information to answer #32.

A store carries just one brand of jeans. Due to poor sales, the owner is going to switch to a brand that better appeals to 15- to 30-year-olds.

32. How can the owner collect data to decide what brand to switch to? Explain fully, including who and what to ask.

Use this information to answer #33 to 36.

The store switches to a brand that sells for \$89.99 before tax. The revenue from jean sales should be at least \$1000.00 per day.

33. Define variables and write an equation to model the sale of jeans. Do not include tax.

34. Create a table of values for the equation for at least five pairs of jeans. Graph the results.

35. Write an inequality that represents the required sales for the day.

36. How many pairs of jeans must be sold in the day to reach the minimum sales? Justify your answer mathematically.