

## Part I: Selected Response

1. Simplify:  $\sqrt{\frac{64}{100}}$   $\frac{8}{10}$

A.  $\frac{2}{25}$

B.  $\frac{2}{5}$

C.  $\frac{16}{25}$

D.  $\frac{4}{5}$

 2. Which benchmarks would provide the best estimation for  $\sqrt{0.33}$ ?

A.  $\sqrt{0.16}$  and  $\sqrt{0.49}$

B.  $\sqrt{0.25}$  and  $\sqrt{0.36}$

C.  $\sqrt{0.32}$  and  $\sqrt{0.34}$

D.  $\sqrt{0.50}$  and  $\sqrt{0.60}$

 3. Write as a single power:  $-2 \times -2 \times -2 \times -2$ 

A.  $-2^4$

B.  $-(-2)^4$

C.  $(-2)^4$

D.  $2^4$

 4. Evaluate:  $(-4)^0$ 

A.  $-4$

B.  $-1$

C.  $0$

D.  $1$

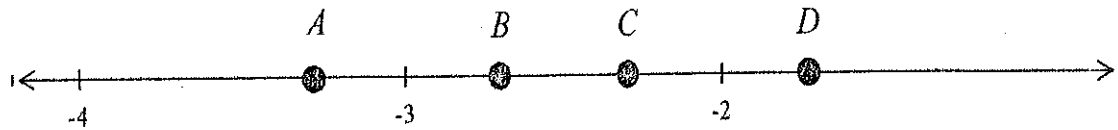
5. Write as a single power:

$$(3^3 \times 3^2)^2$$

$$(3^5)^2$$

- A.  $3^7$
- B.  $3^{10}$
- C.  $3^{12}$
- D.  $3^{25}$

6. Where is  $-2\frac{1}{3}$  located on the number line?



- A. A
- B. B
- C. C
- D. D

7. Which rational number is between  $-5.315$  and  $-5.204$ ?

- A.  ~~$-5.342$~~
- B.  ~~$-5.318$~~
- C.  $-5.213$
- D.  $-5.201$

8. Evaluate:  $-\frac{5}{6} + \frac{3}{10}$

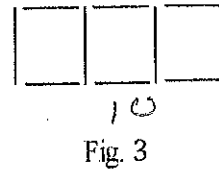
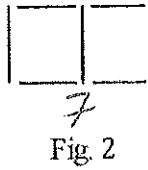
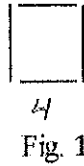
- A.  $-\frac{17}{15}$
- B.  $-\frac{8}{15}$
- C.  $\frac{8}{15}$
- D.  $\frac{17}{15}$

$$\frac{-25}{30} + \frac{9}{30}$$

$$\frac{-16}{30} = \frac{-8}{15}$$

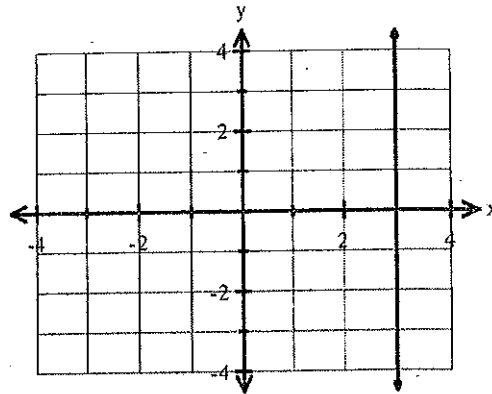
9. If the pattern continues, how many line segments are in Figure 4?

- A. 10
- B. 13
- C. 14
- D. 16



10. What is the equation of the graph?

- A.  $x = -3$
- B.  $x = 3$
- C.  $y = -3$
- D.  $y = 3$



11. Which linear relation describes the pattern in the table?

- A.  $y = -5x - 10$
- B.  $y = -5x - 5$
- C.  $y = 5x - 10$
- D.  $y = 5x - 5$

$x$	1	2	3	4
$y$	-5	0	5	10

$5x - 10$

12. Which expression has degree 2 and contains 3 terms?

- A.  $3n^2 + 4n$
- B.  $4n^2 + 7n + 5$
- C.  $2n^3 + 7n - 1$
- D.  $5n^2 + 3$

13. Simplify:  $(5x^2 - 3x + 4) - (2x^2 - 4x - 1)$

A.  $3x^2 - 7x + 3$

B.  $7x^2 - 7x + 3$

C.  $7x^2 + x + 5$

D.  $3x^2 + x + 5$

$3x^2 + x + 5$

14. Determine the quotient:  $\frac{-6n^2 + 9n}{3n}$

A.  $2n - 3$

B.  $-2n + 3$

C.  $2n^2 - 3n$

D.  $-2n^2 + 3n$

$-2n + 3$

15. Solve:  $\frac{10}{x} = -2$

A. -20

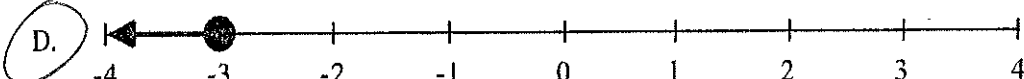
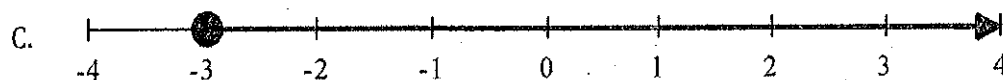
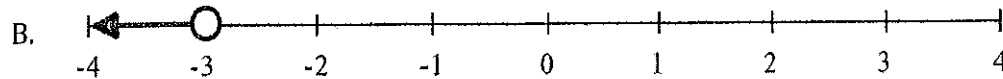
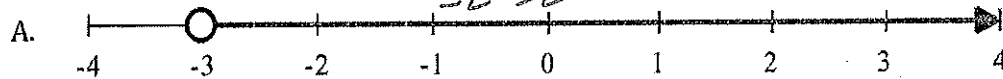
B. -5

C. 5

D. 20

16. Which represents the solution of  $-2c \geq 6$ ?

$c \leq -3$



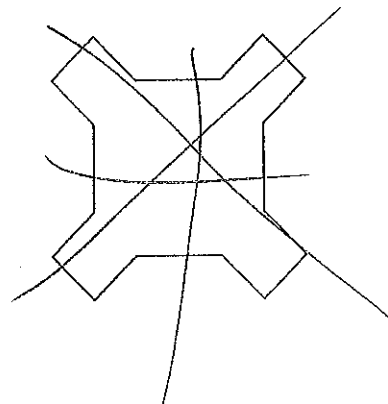
17. A student solved this equation incorrectly. In which step did the first error occur?

- A. Step 1
- B. Step 2
- C. Step 3
- D. Step 4

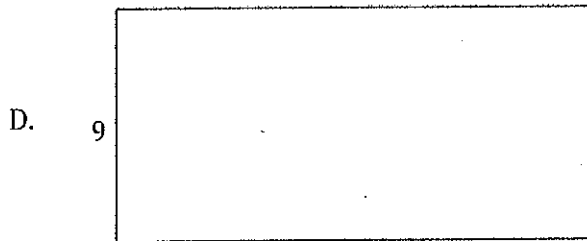
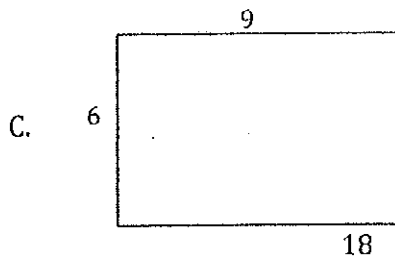
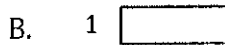
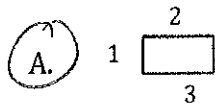
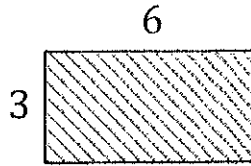
	$3(x - 2) = 4(2x + 6)$
Step 1	$3x - 2 = 8x + 6$
Step 2	$3x - 2 + 2 = 8x + 6 + 2$ $3x = 8x + 8$
Step 3	$3x - 8x = 8x - 8x + 8$ $-5x = +8$
Step 4	$\frac{-5x}{-5} = \frac{8}{-5}$ $x = \frac{-8}{5} = -1\frac{3}{5}$

18. How many lines of symmetry does the figure below contain?

- A. 1
- B. 2
- C. 3
- D. 4



19. Compared to the shaded figure below, which diagram has a scale factor of  $\frac{1}{3}$ ?



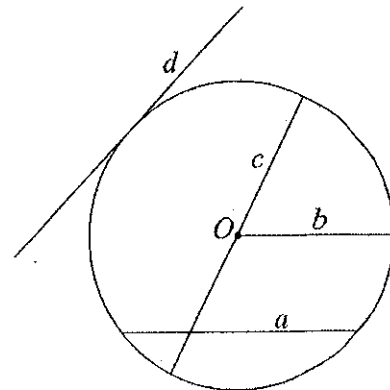
20. In the circle with centre  $O$ , which is a tangent line?

A.  $a$

B.  $b$

C.  $c$

D.  $d$



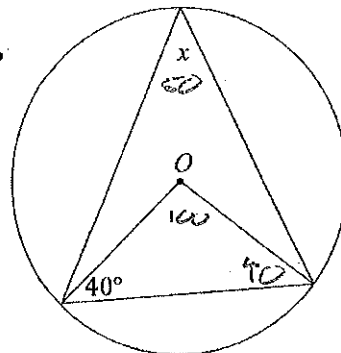
21. In the circle with centre  $O$ , what is the value of  $x$ ?

A.  $20^\circ$

B.  $50^\circ$

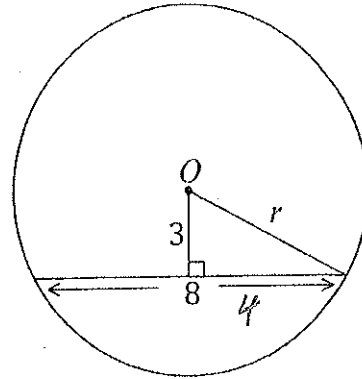
C.  $80^\circ$

D.  $100^\circ$



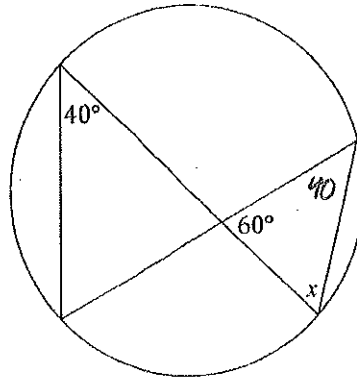
22. In the circle with centre  $O$ , what is the radius,  $r$ ?

- A. 5
- B. 7
- C. 11
- D. 25



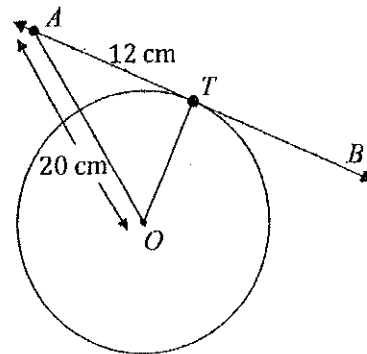
23. What is the value of  $x$ ?

- A.  $20^\circ$
- B.  $40^\circ$
- C.  $60^\circ$
- D.  $80^\circ$



24. If  $AB$  is tangent to the circle with centre  $O$ , what is the length of the radius, in cm?

- A. 8
- B. 16
- C. 23
- D. 32

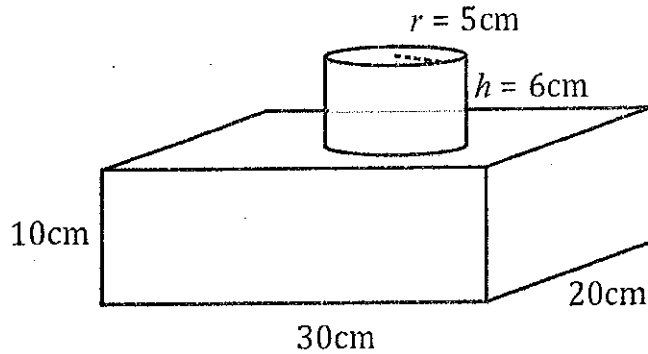


25. Jenna knows she has a 1 in 2 chance of getting tails when she flips a coin.  
What does this represent?

- A. Assumption
- B. Experimental Probability
- C. Subjective Judgment
- D. Theoretical Probability

Part II: Constructed Response

- 3 26. The Cake King is icing a cake. What surface area of the cake has icing if there is no icing on the bottom of the cake or between the 2 layers?  
(Note: SA of Cylinder is  $2\pi rh + 2\pi r^2$ , use  $\pi = 3.14$ )



$$\begin{aligned} \text{Top SA} &= 2\pi rh + 2\pi r^2 \\ &= 2(3.14)(5)(6) + 2(3.14)(5^2) \\ &= 188.4 + 157 \\ &= 345.4 \end{aligned}$$

Bottom

$$\begin{aligned} \text{SA} &= 2(30 \times 10) + 2(20)(10) + (30)(20) \\ &= 600 + 400 + 600 \\ &= 1600 \end{aligned}$$

Overlap

$$\begin{aligned} &= 2\pi r^2 \\ &= 2(3.14)(5^2) \\ &= 157 \end{aligned}$$

$$\begin{aligned} \text{TSA} &= 345.4 + 1600 - 157 \\ &= 1788.4 \text{ cm}^2 \end{aligned}$$



- 2 27. Write as a single power AND THEN evaluate:

$$\frac{3^8 \times 3^3}{3^2 \times (3^2)^3}$$

$$= \frac{3^{11}}{3^2 \times 3^6}$$

$$= \frac{3^{11}}{3^8}$$

$$= 3^3 = 27$$

- 2 28. Evaluate:

A.  $-2\frac{1}{4} \times \frac{8}{3}$

$$= \frac{-3}{1} \times \frac{8}{3}$$

$$= -6$$

B.  $-\frac{15}{4} \div -5$

$$= \frac{-15}{4} \times \frac{-1}{5}$$

$$= \frac{3}{4}$$

- 2 29. Elsa evaluated an expression. Her solution is shown. Explain the error then evaluate the expression correctly.

$$\begin{aligned} \frac{5}{4} - \frac{3}{4} \times \frac{-1}{3} \\ = \frac{2}{4} \times \frac{-1}{3} \\ = \frac{-2}{12} \\ = \frac{-1}{6} \end{aligned}$$

Your Explanation	Your Solution
<p>Elsa did not follow the order of operations. She subtracted before multiplying</p>	$\begin{aligned} \frac{5}{4} - \frac{3}{4} \times \frac{-1}{3} \\ = \frac{5}{4} - \frac{-1}{4} \\ = \frac{6}{4} \\ = \frac{3}{2} \end{aligned}$

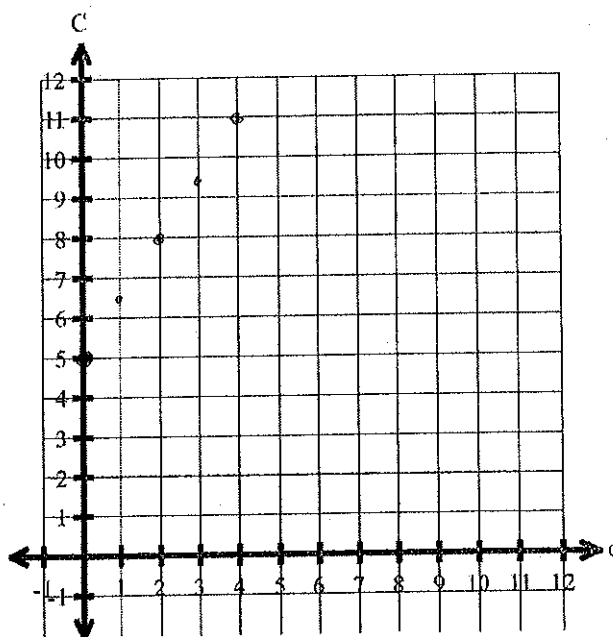
30. The cost,  $C$ , of downloading songs,  $d$ , from a website is \$1.50 per song, plus a one time start-up fee of \$5.00.

- 1 A. Write an equation that relates to the total cost to the number of songs downloaded.

$$C = 1.5d + 5$$

- 2 B. Complete the table and graph the relation.

$d$	$C$
0	5
1	6.5
2	8
3	9.5
4	11



- 1 C. If you had \$25.00 would you have enough to download 15 songs? Explain.

$$25 = 1.5d + 5$$

$$\frac{20}{1.5} = \frac{1.5d}{1.5}$$

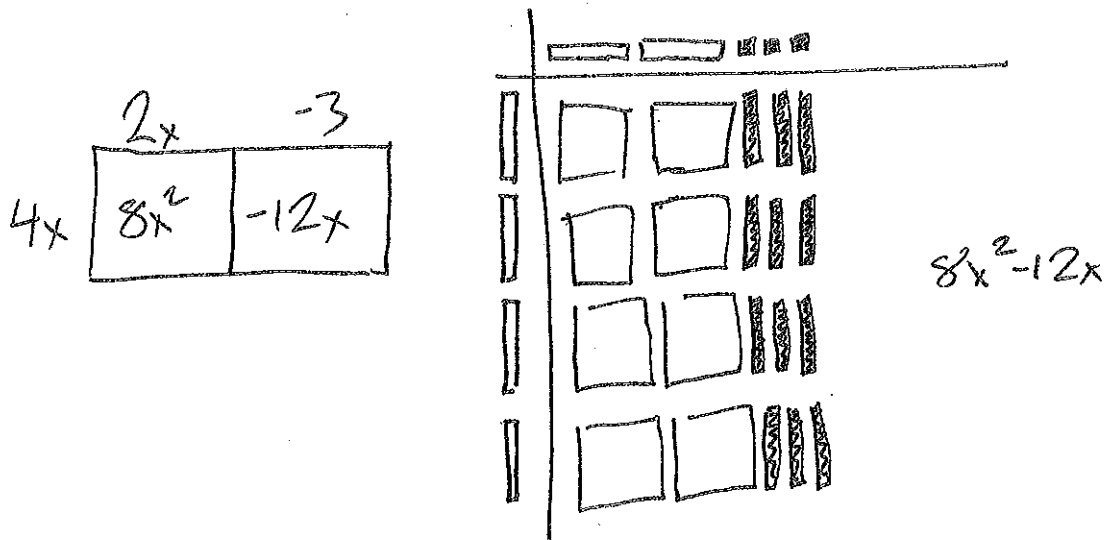
$$d = 13.3$$

No, I could only download 13 songs.

1 31. A. Simplify:  $(4x)(2x - 3)$

$$= 8x^2 - 12x$$

1 31. B. Verify your solution above using a model of your choice (algebra tiles, area model, etc.)



2 32. Solve:  $3(7a - 6) > 12a$

$$21a - 18 > 12a$$

$$\begin{array}{r} -18 > -9a \\ \hline -9 & -9 \end{array}$$

$$2 < a$$

$$a > 2$$

2

33. Solve:

$$\left(\frac{x}{2} - \frac{1}{3} = \frac{3}{4}\right) \times 12$$

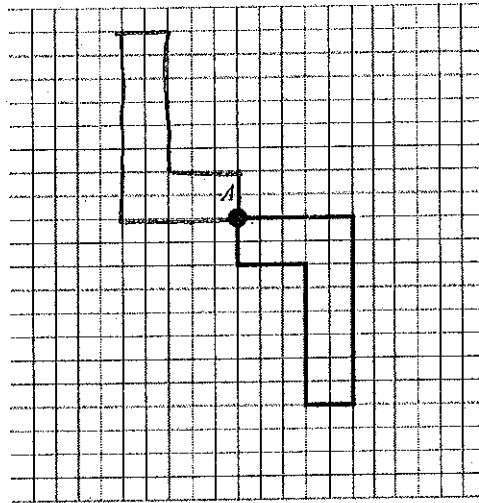
$$6x - 4 = 9$$

$$\frac{6x}{6} = \frac{13}{6}$$

$$x = \frac{13}{6}$$

1

34. A. Rotate the object 180° about vertex A. Draw the rotation image.



1

B. Look at the shape formed by the object and its image above. State the order of rotation of the shape.

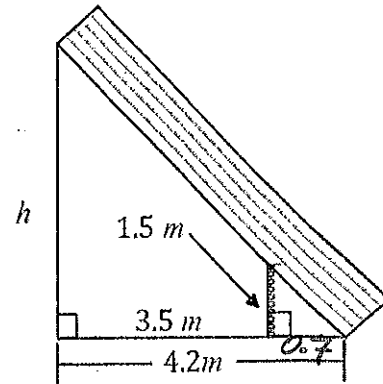
2

- 2 35. A ramp has a support brace which is 1.5 m high. Given the measurements shown, determine the height,  $h$ , of the ramp?

~~$$1.5 \times \frac{h}{1.5} = \frac{4.2 \times 1.5}{0.7}$$~~

$$1.5 \times \frac{h}{1.5} = \frac{4.2 \times 1.5}{0.7}$$

$$h = 9m$$



- 2 36. The Government of NL was trying to determine the cell phone usage of Grade 9 students during class time. A team of researchers observed 3 randomly selected Grade 9 classes. All three classes came from the same town. They found that 58 out of 75 students were using cell phones during class time. They concluded that 77% of all Grade 9 students in the province use cell phones during class time. Was this conclusion valid? Explain.

No, the conclusion is not valid because they only observed classes in 1 town.