Name _____

Score _____

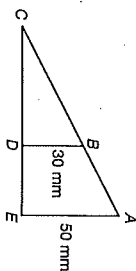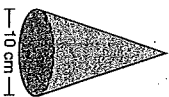**1.** The scale of a model car is
(87) 1 in. = 1.5 ft. If the model is
9 inches long, how long is the car?

2. Triangles *ACE* and *BCD* are similar.
(85) Segment *CB* is 54 mm. How long is
segment *CA*?

C

30 mm

D   B

50 mm

E   A

3. An item regularly priced at $49.95
(97) was marked down to $39.95.
Estimate the percent of discount.

4. The height of the cone is 12 cm.
(86) What is its volume?

|—10 cm—|

5. What is the slant height of the cone
(95) in question 4?

6. Evaluate when $\sqrt{b^2 - 4ac}$ when
(14, 21) $a = 1, b = 5,$ and $c = -6$.

7. The dimensions of a cube are
(91) doubled. The volume of the
enlarged cube is how many times
the volume of the original cube?

For questions 8 and 9, refer to this
rectangle.

2x + 3

x – 1

8. Write an expression for the
(92) perimeter of this rectangle.

9. Write an expression for the area of
(92) this rectangle.

10. Which of the following is a subset
(90) of the set of whole numbers?

A. {rational numbers}

B. {real numbers}

C. {integers}

D. {counting numbers}

11. Graph on a number line:
(94) –3 < x ≤ 2

12. Solve: $x^2 + 1 = 50$
(93)

13. Graph these equations to find the
(89) one pair of x and y values that is a
solution to both equations.

$\begin{cases} y = x - 1 \\ y = -x + 3 \end{cases}$

14. Derrick ran 400 meters in 1 minute
(64, 73) (60 sec). Convert Derrick's average
speed to kilometers per hour.

15. Two number cubes are rolled at the
(32) same time. What is the probability
that both number cubes will show
an even number?

16. How much money is $6\frac{2}{3}\%$ of
(84) $24.00?

For questions 17 and 18, solve for x.

17. 3(x + 1) – 2x = 2
(50)

18. $\frac{2}{3}x + \frac{1}{2} = \frac{7}{12}$
(50)

For questions 19 and 20, simplify the
expression.

19. 3(x + 2) + 2(x – 3)
(21, 31)

20. $\sqrt{3} \cdot \sqrt{15}$
(78)

1.
$1 in = \frac{9 ft}{x \cdot ft}$ (1.5 ft)

$1.5 \times 9 = 13.5 \, ft$

$13.5 \div 1 = \boxed{13.5 \, ft}$

2.

$\frac{54}{30} = \frac{x}{50}$

$50 \cdot 54 = 2700$

$2700 \div 30 = 2700$

$2700 \div 30 = \boxed{90 \, mm}$

3. Regular $
Discount
New $

| | 100 | 49.95 |
| | x | 10 |

$\frac{100}{x} = \frac{49.95}{10}$

$100 \cdot 10 = 1000$

$1000 \div 49.95 = \boxed{20\%}$

4.
$V = (\pi \cdot r^2 \cdot h) \div 3$

$V = (3.14 \cdot 5^2 \cdot 12) \div 3$

$V = 942 \div 3$

$V = \boxed{314 \, cm^3}$

5.
$a^2 + b^2 = c^2$

$5^2 + 12^2 = c^2$

$25 + 144 = c^2$

$169 = c^2$

$\sqrt{169} = \boxed{13 \, cm}$

6.
$\sqrt{b^2 - 4ac}$ $a=1$
$\sqrt{5^2 - (4)(1)(-6)}$ $b=5$
$\sqrt{25 - (-24)}$ $c=-6$
$\sqrt{49} = \boxed{7}$

7.
Volume is cubed

scale factor = 2

$2^3 = 2$

$2^3 = \boxed{8 \, times}$

8.

$P = 2x+3 + 2x+3 + 1x-1 + 1x-1$

$P = \boxed{6x-4 \, units}$

9.
$A = (2x+3)(x-1)$

F: $2x \cdot x = 2x^2$
O: $2x \cdot -1 = -2x$
I: $3 \cdot x = 3x$
L: $3 \cdot -1 = -3$

$\boxed{2x^2 + 1x - 3 \, units^2}$

10.
D. all
Counting #'s
are all whole #'s

11.
$-3 < x \le 2$

$-3 \; -2 \; -1 \; 0 \; 1 \; 2$

12.
$x^2 + x = 50$

$x^2 = 49$

$\sqrt{49} = \boxed{7, -7}$

13.
$y = x - 1$
$y = -x + 3$

$\boxed{(2,1)}$

14.
$\frac{400 \, m}{1 \, min} \cdot \left(\frac{60 \, min}{1 \, hr}\right) \cdot \left(\frac{1 \, km}{1000 \, m}\right) = \frac{24,000}{1,000} = \frac{km}{hr}$

$= \boxed{24 \frac{km}{hr}}$

15.
Prob of even $= \frac{1}{2}$

Prob of even $= \frac{1}{2} \cdot \frac{1}{2} = \boxed{\frac{1}{4}}$

16.
$6\frac{2}{3}$ & of 24

$24 \div 100 = .24$

$.24 \times 6.6 = \boxed{5160}$

17.
$3(x+1) - 2x = 2$
$3x + 3 - 2x = 2$
$1x + 3 = 2$
$1x + 3 - 3 = 2 - 3$
$1x = -1$
$-1 \div 1 = \boxed{-1} = x$

multi $\frac{6.6}{100}$ of 24
divide $24 \div 100 = .24$

18.
$\frac{2}{3} x = \frac{1}{12}$
$\frac{2}{3} x = \frac{1}{12}$
$\frac{1}{12} \div \frac{2}{3} = \frac{3 \div 3}{24 \div 3}$

19.
$3(x+2) + 2(x-3)$
$(3x + 6) + (2x - 6)$
$\boxed{5x}$

20.
$\sqrt{3} \cdot \sqrt{15} = \sqrt{45}$
$= \sqrt{3 \cdot 3 \cdot 5}$
$= \boxed{3\sqrt{5}}$

45
5 9
3 3