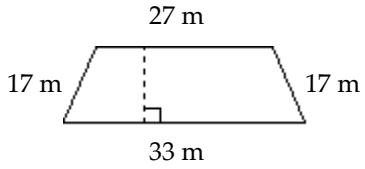
HOUSTON COMMUNITY COLLEGE
MATHEMATICS DEPARTMENT
SOUTHEAST COLLEGE

FINAL EXAM REVIEW ITEMS Math 0409: Foundations of Mathematics Revised: January 2015

1) Combine like terms:
$10x - (-6x) - 12 - (-9x) + 6$
A) $-6 + 25x$ B) $4x + 15x$
C) $-6 - 25x$ D) $-6 - 25$

**Find the perimeter of the polygon.**

2)

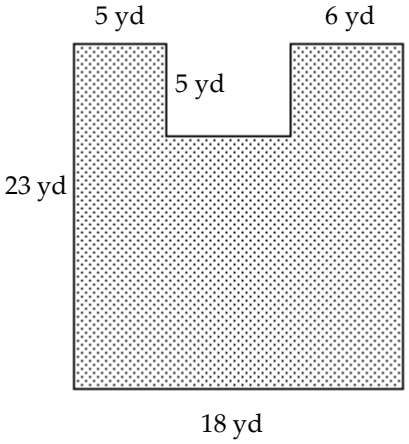



**Solve the problem.**

3) A yard in the shape of a square measures 18 ft on each side. A triangular area with a height of 4 ft and a base of 9 ft is dug up for a flower bed. How much yard area is left over?

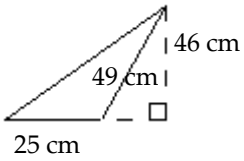
**Find the area of the shaded region.**

4)

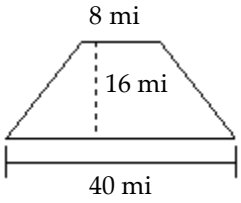



**Find the area.**

5)

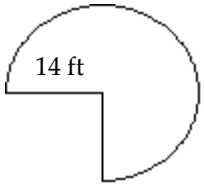



6)



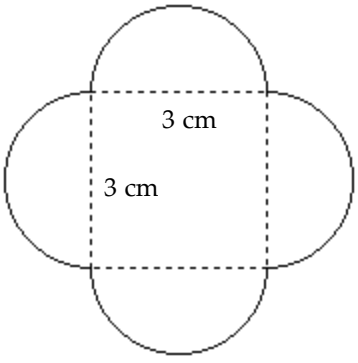

**Find the area of the figure. Use 3.14 for $\pi$.**

7)



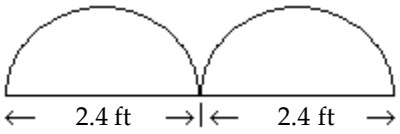

**Find the perimeter. Use 3.14 for $\pi$.**

8)



**Find the area of the figure. Use 3.14 for $\pi$.**

9)




**Solve. Clear fractions or decimals first.**

10) $\frac{2}{5}x - \frac{1}{3}x = 5$

**Solve and check the linear equation.**

11) $2x - 4 + 5(x + 1) = -2x - 3$

A) {– 6}  B) $\{-\frac{4}{3}\}$

C) {– 2}  D) $\{-\frac{4}{9}\}$

12) The sum of twice a number and 5 less than the number is the same as the difference between – 17 and the number. What is the number?

A) –3  B) –2  C) –4  D) –6

**Solve the problem.**

13) The sum of three consecutive integers is 528. Find the integers.

14) If the first and third of three consecutive odd integers are added, the result is 87 less than five times the second integer. Find the third integer.

**Solve.**

15) $F = \frac{9}{5}C + 32$ for C

16) Jim drove 168 mi in 4 hr. If he can keep the same pace, how long will it take him to drive 504 mi?

**Divide and simplify.**

17) $\frac{z^{-7}}{z^{-5}}$

**Solve using the addition principle. Graph and write set–builder notation for the answer.**

18) $9t + 2 \geq 8t + 3$

**Solve using the multiplication principle.**

19) $-6a < \frac{1}{6}$

**Simplify.**

20) $\left(\frac{x^5}{y^5z^4}\right)^2$

A) $\frac{x^7}{y^8z^6}$  B) $\frac{x^{10}}{y^5z^8}$

C) $\frac{x^8}{y^{10}z^8}$  D) $\frac{x^{10}}{y^{10}z^8}$

**Convert to decimal notation.**

21) $6.398 \times 10^5$

**Evaluate the polynomial.**

22) $-2x^2 - 2x - 4$ for $x = -3$

**Identify the polynomial as a monomial, binomial, trinomial, or none of these. Give its degree.**

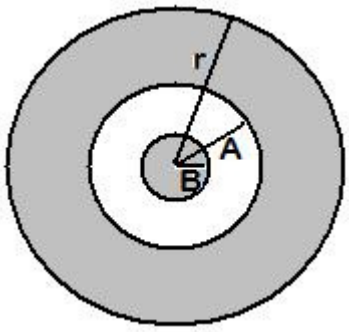
23) $-18y^4 + 9y^3 - 7$

**Subtract.**

24) $(9x^5 + 20x^4 + 5) - (4x^4 + 6x^5 - 10)$

**Solve the problem.**

25) Find a polynomial for the sum of the shaded areas of the figure. A = 6, B = 4




**Apply the product rule for exponents, if possible.**

26) $(-3x^5y)(-4x^9y^2)$

**Multiply.**

27) $(2x - 9)(2x + 9)$

28) $(6p - 1)(36p^2 + 6p + 1)$

29) $(4x - 2)(4x - 2)$

30) $(9m + 10)^2$

**Find the degree of the polynomial.**

31) $x^6yz - x^8y^2 - 3x^5y^2z^3$

**Divide.**

32) $\dfrac{-18x^4 - 24x^3 - 18x^2}{-6x^3}$

**Factor.**

33) $2m(9 - m) + 7n(9 - m)$

34) One of the factors of $x^2 - 5x - 36$ is:

A) $x + 4$ B) Prime

C) $x + 9$ D) $x + 1$

**Factor.**

35) One of the factors of $x^2 - 12x + 36$ is:

A) $(x + 6)^2$ B) $(x - 6)^2$

C) $(x + 6)(x - 6)$ D) Prime

36) $6x^2 - 6x - 36$

**Determine whether the following is a difference of squares.**

37) $x^2 + 4$

**Factor completely.**

38) $49x^2 - 36$

39) $10a^3 + 15a^2b - 4ab^2 - 6b^3$

40) $x^2 - x - 42$

**Solve the problem.**

41) The length of a rectangular frame is 3 cm more than the width. The area inside the frame is 180 square cm. Find the width of the frame.

**Multiply and, if possible, simplify.**

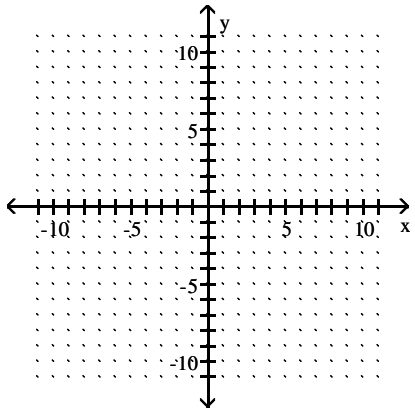
42) $\dfrac{k^2 + 10k + 21}{k^2 + 16k + 63} \cdot \dfrac{k^2 + 9k}{k^2 + 7k + 12}$

**Divide and, if possible, simplify.**

43) $\dfrac{3p - 3}{p} \div \dfrac{8p - 8}{3p^2}$

**Graph the line containing the given pair of points.**

44) (3, 3) (–4, 3)




**Solve the equation.**

45) $7s + 12 = -8s$

46) $3(y + 8) - 4(y - 3) = 0$

**Find the following.**

47) Find $-(-x)$ when x is –69.

**Simplify.**

48) $27 + (-51) - 18 - (-57) + (-79)$

49) $3[-3 + 8(-3 + 5)]$

**Solve.**

50) $x = \dfrac{w + y + z}{8}$ for y

**Add or subtract as indicated.**

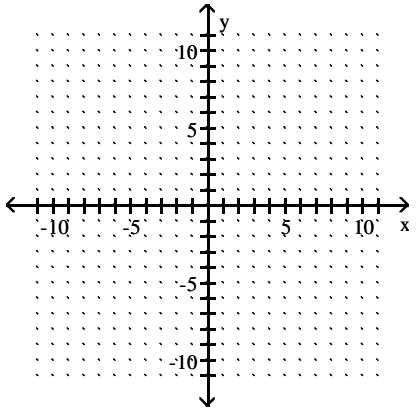
51) Subtract. $(3q^2 + 10q - 8) - (6q^2 + 8q + 5)$

**Perform the indicated operation. Write the answer in scientific notation.**

52) $(5 \times 10^8)(7 \times 10^9)$

**Graph the linear equation.**

53) $7x - y = -7$



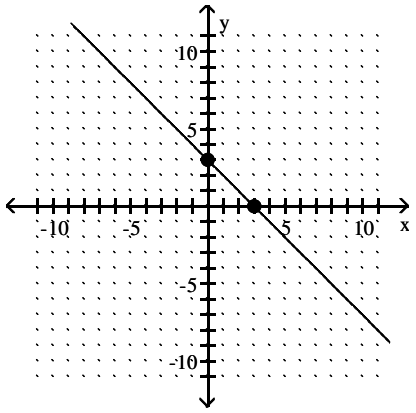

**Perform the indicated operation. Write the answer in scientific notation.**

54) $9.18 \times 10^3 \div 2 \times 10^1$

55) $\dfrac{9 \times 10^5}{3 \times 10^{-4}}$

**Use the coordinates of the indicated points to find the slope of the line.**

56)




**Find the slope of the line through the pair of points.**

57) (–1, 3) and (–9, –3)

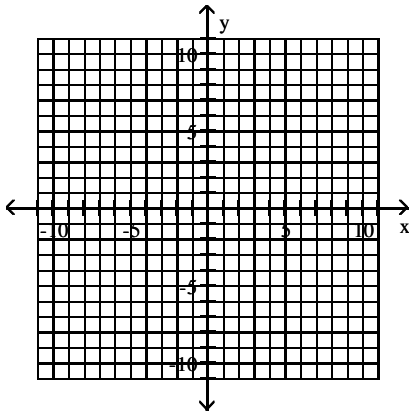
**Write the equation of the line with the given slope and y–intercept.**

58) slope –5;
y–intercept (0, 2)

59) slope $\frac{6}{5}$;
y–intercept (0, –3)

**Graph the linear inequality.**

60) $2x - 6 > -3y$



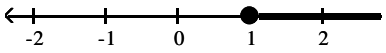

**Find the intersection.**

61) $\{0, 5, 8\} \cap \{4, 6, 8, 10\}$

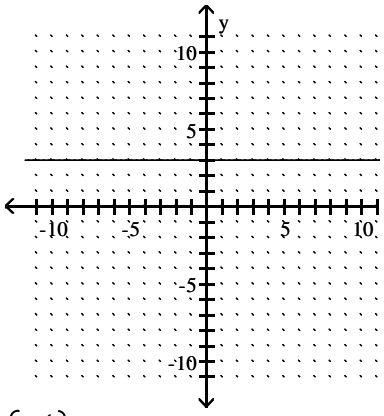
**Find the union.**

62) $\{e, f, g, h, i\} \cup \{h, i, j, k, l\}$

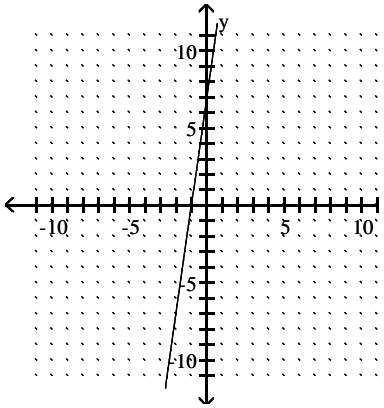
1) A
2) 94 m
3) 306 $ft^2$
4) 379 $yd^2$
5) 575 $cm^2$
6) 384 $mi^2$
7) 461.58 $ft^2$
8) 18.84 cm
9) 4.5216 $ft^2$
10) 75
11) D
12) A
13) 175, 176, 177
14) 31
15) $C = \frac{5}{9}(F - 32)$
16) 12 hr
17) $\frac{1}{z^2}$
18) $\{t \mid t \geq 1\}$



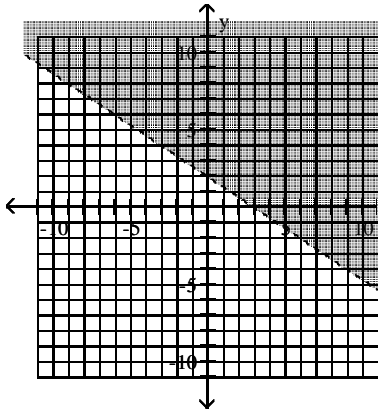

19) $\left\{a \mid a > -\frac{1}{36}\right\}$
20) D
21) 639,800
22) –16
23) Trinomial, degree 4
24) $3x^5 + 16x^4 + 15$
25) $\pi r^2 - 20\pi$
26) $12x^{14}y^3$
27) $4x^2 - 81$
28) $216p^3 - 1$
29) $16x^2 - 16x + 4$
30) $81m^2 + 180m + 100$
31) 10
32) $3x + 4 + \frac{3}{x}$
33) (2m + 7n)(9 – m)
34) A
35) B
36) 6(x + 2)(x – 3)
37) No
38) (7x + 6)(7x – 6)
39) $(5a^2 - 2b^2)(2a + 3b)$
40) (x + 6)(x – 7)
41) 12 cm
42) $\frac{k}{k + 4}$
43) $\frac{9p}{8}$




44)
45) $\left\{-\frac{4}{5}\right\}$
46) {36}
47) –69
48) –64
49) 39
50) y = 8x – w – z
51) $-3q^2 + 2q - 13$
52) $3.5 \times 10^{18}$
53)




54) $4.59 \times 10^2$
55) $3 \times 10^9$
56) –1
57) $\frac{3}{4}$
58) y = –5x + 2
59) $y = \frac{6}{5}x - 3$
60)




61) {8}
62) {e, f, g, h, i, j, k, l}