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Date:
Math 8

## Mixed Final Review 9

1) Which of the following expressions represents $\left(3 x^{2} y^{4}\right)\left(4 x y^{2}\right)$ in simplest form?
A $12 x^{3} y^{8}$
C $12 x^{2} y^{6}$
B $12 x^{2} y^{8}$
D $12 x^{3} y^{6}$
2) If the perimeter of a rectangle is $10 x+8$ and the length is $4 x-5$, what is the width?
A $x-9$
C $x+9$
B $6 x+3$
D $6 x-3$
3) What is the sum of $4 x^{3}+6 x^{2}+2 x-3$ and $3 x^{3}+3 x^{2}-5 x-5$ ?
A $7 x^{3}+3 x^{2}+7 x+2$
B $7 x^{6}+9 x^{4}-3 x^{2}-8$
C $7 x^{3}+3 x^{2}-3 x-8$
D $7 x^{3}+9 x^{2}-3 x-8$
4) If the perimeter of a rectangle is $16 x+6$ and the length is $5 x-2$, what is the width?
A $3 x+5$
C $11 x-8$
B $3 x-5$
D $11 x+8$
5) In the accompanying diagram, $\overrightarrow{\mathrm{BD}} \perp \stackrel{\rightharpoonup}{\mathrm{ABC}}$ at B and $\overrightarrow{B E} \perp \overrightarrow{B F}$ at $B$.


If $\mathrm{m} \angle \mathrm{DBF}$ is the complement to both $\mathrm{m} \angle E B D$ and $\mathrm{m} \angle F B C$, what is $\mathrm{m} \angle E B D$ ?
A $110^{\circ}$
C $20^{\circ}$
B $90^{\circ}$
D $70^{\circ}$
6) When $5 x+4 y$ is subtracted from $5 x-4 y$, what is the difference?
A $8 y$
C $10 x$
B $-8 y$
D 0
7) Which expression is equivalent to $-3 x(x-4)-2 x(x+3)$ ?
A $-x^{2}-1$
C $-5 x^{2}-6 x$
B $-5 x^{2}+6 x$
D $-x^{2}+18 x$
8) Simplify the given expression:
$7 x^{2}-5 t-2\left(x^{2}-3 t\right)$
A $9 x^{2}-8 t$
C $5 x^{2}+2 t$
B $9 x^{2}-2 t$
D $5 x^{2}+t$
9) Which one of the following expressions represents $\frac{27 a^{18} b^{5}}{9 a^{6} b}$ in simplest form?
A $3 a^{3} b^{5}$
C $18 a^{12} b^{4}$
B $3 a^{12} b^{4}$
D $18 a^{3} b^{5}$
10) What is the difference when $3 g^{2}-4 g+2$ is subtracted from $7 g^{2}+5 g-1$ ?
A $10 g^{2}+g+1$
C $4 g^{2}+9 g-3$
B $-4 g^{2}-9 g+3$
D $4 g^{2}+g+1$
11) Given the diagram below.


If angle 3 in the given diagram has a measure of $35^{\circ}$, what would be the measure of angle 1 ?
A $35^{\circ}$
C $55^{\circ}$
B $10^{\circ}$
D $145^{\circ}$
12) Which expression is equivalent to $3^{3} \cdot 3^{4}$ ?
A $9^{7}$
C $9^{12}$
B $3^{7}$
D $3^{12}$
13) What is the product of $-3 x^{2} y$ and $\left(5 x y^{2}+x y\right)$ ?

A $-15 x^{2} y^{2}-3 x^{2} y$
B $-15 x^{3} y^{3}-3 x^{3} y$
C $-15 x^{3} y^{3}-3 x^{3} y^{2}$
D $-15 x^{3} y^{3}+x y$
14) Which expression represents $\frac{\left(2 x^{3}\right)\left(8 x^{5}\right)}{4 x^{6}}$ in simplest form?
A $x^{2}$
C $x^{9}$
B $4 x^{9}$
D $4 x^{2}$

Questions 15 and 16 refer to the following:

Find the quotient of the given expression:
15) $\frac{24 x^{6}-30 x^{3}+6 x}{6 x}$
A $4 x^{5}-5 x^{2}+1$
C $4 x^{6}-5 x^{3}+1$
B $4 x^{5}-5 x^{2}+x$
D $18 x^{5}-36 x^{2}$
16) $\frac{8 x^{3}-12 x+20}{4}$
A $8 x^{3}-12 x+5$
C $2 x^{3}-3 x+5$
B $2 x^{3}-3 x+4$
D $4 x^{3}-8 x+16$
17) What is the result when $2 x^{2}+3 x y-6$ is subtracted from $x^{2}-7 x y+2$ ?
A $-x^{2}-10 x y+8$
C $x^{2}-4 x y-4$
B $-x^{2}-4 x y-4$
D $x^{2}+10 x y-8$
18) The perimeter of a triangle is $14 x-4$. If two of the sides measure $3 x-2$ and $5 x+3$, then how long is the third side?
A $3(2 x-1)$
C $6 x+5$
B $7 x-2$
D $6 x-5$
19) What are a pair of adjacent angles in the diagram below?


A 2 and 3
B 1 and 3
20) Expand and simplify the given polynomials:
$\left(2 x^{2}+3 x-4\right)(2 x-5)$
A $4 x^{3}+4 x^{2}+23 x+20$
B $4 x^{3}+16 x^{2}-7 x+20$
C $4 x^{3}-4 x^{2}-23 x+20$
D $4 x^{3}-4 x^{2}-7 x+20$
21) When $4 x^{2}+7 x-5$ is subtracted from $9 x^{2}-2 x+3$, the result is
A $-5 x^{2}+5 x-2$
C $-5 x^{2}+9 x-8$
B $5 x^{2}-9 x+8$
D $5 x^{2}+5 x-2$

Questions 22 through 28 refer to the following:

Expand and simplify the given polynomials:
22) $(y+5)(y+1)$
23) $(z+4)(z+7)$
24) $(z+3)(z-9)$
25) $(3 x+4)(x+7)$
26) $(z+7)(2 z-3)$
27) $(2 x-5)(x-3)$
28) $(4 x+3)(x-1)$
29) Determine which number property is illustrated by the given statement:
$5+(-5)=0$
A Commutative Property of Addition
B Identity Property for Addition
C Addition Property of Equality
D Property of Additive Inverse
30) Two angles are complementary. If the measure of one angle is 15 less than twice the measure of the second angle, what is the number of degrees in the measure of the larger angle?

Show your work.

Answer: $\qquad$ -
31) In the accompanying diagram, $\overparen{A O B}$ is a straight line, $m \angle A O D=(3 x-8)^{\circ}$, and $m \angle B O D=x^{\circ}$.


Find the value of $x$.
Show your work.

Answer: $\qquad$
32) A plane travels at a rate represented by $(x+100)$ miles per hour. Represent the distance it can travel in $(2 x+3)$ hours.
33) The price of a coat is represented by $(2 x+5)$ dollars. Represent the amount a man paid for $(3 x-1)$ of these coats.
34) The dimensions of a rectangle are represented by $7 c-8 d$ and $3 c+5 d$. Represent the area of the rectangle.
35) The dimensions of a rectangle are represented by $11 x-8$ and $3 x+5$. Represent the area of the rectangle.
36) In the accompanying diagram, line $\overleftrightarrow{P Q}$ is parallel to line $\overleftrightarrow{R S}$, line $\overleftrightarrow{T U}$ is a transversal, $\mathrm{m} \angle P A T=(3 x+12)^{\circ}$, and $\mathrm{m} \angle S B T=(2 x+13)^{\circ}$. Use what you know about geometric angle relationships to find the value of $x$. Show all your work and explain how you got your answer.

37) Given the figure below where $a \| b$.


Find the $m \angle 1$ if $m \angle 5=127^{\circ}$.
38) Which of the following is an irrational number?
A $\pi$
B $\frac{22}{7}$
C $3 \frac{1}{7}$
D 3.14
39) Draw a number line and graph and label the following points: $\frac{8}{5}, 1,-2.5, \pi$
40) The length of a rectangle is $2 x-5$ and its width is $x+7$. Express the area of the rectangle.

1) $D$
2) C
3) $D$
4) A
5) C
6) B
7) B
8) D
9) B 10) C
10) A
11) $B$
12) C
13) D
14) A
15) C
16) A
17) D
18) A
19) C
20) $B$
21) $y^{2}+6 y+5$
22) $z^{2}+11 z+28$
23) $z^{2}-6 z-27$
24) $3 x^{2}+25 x+28$
25) $2 z^{2}+11 z-21$
26) $2 x^{2}-11 x+15$
27) $4 x^{2}-x-3$
28) D
29) $55^{\circ}$

WORK SHOWN: $x=$ smaller angle, $2 x-15=$ larger angle; $x+2 x-15=90,3 x=105, x=35^{\circ}, 2(35)-15=55^{\circ}$
31) 47

WORK SHOWN: $(3 x-8)+x=180,4 x-8=180,4 x=180+8, x=188 \div 4=47$
32) $2 x^{2}+203 x+300$
33) $6 x^{2}+13 x-5$
34) $21 c^{2}+11 c d-40 d^{2}$
35) $33 x^{2}+31 x-40$
36) 31

WORK SHOWN: $\angle P A T \cong \angle Q A U$ because they are vertical angles, so $\angle Q A U=(3 x+12)^{\circ} . \angle Q A U$ and $\angle S B T$ are supplementary angles, so $3 x+12+2 x+13=180,5 x+25=180,5 x=155, x=31$.
37) $53^{\circ}$
38) A
39)

40) $2 x^{2}+9 x-35$

