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Algebra  
Factoring Special Cases

1.  $x^2 - 16$      2.  $x^2 - 49$      3.  $x^2 - 100$

4.  $4x^2 - 9$      5.  $16x^2 - 49$      6.  $81x^2 - 100$

7.  $16x^2 - 1$      8.  $400x^2 - 49$      9.  $16x^2 - 100$

10.  $x^2 - 100x + 25$      11.  $x^2 - 100x + 25$      12.  $x^2 - 20x + 100$

13.  $x^2 - 20x + 100$      14.  $x^2 - 20x + 100$      15.  $4x^2 - 84x + 49$

**Algebra Factoring Review**

- Vocabulary:**  
**Standard form**  
**Degree of the polynomial**  
**Leading coefficient**  
**Classification by the number of terms**  
**Factor completely**  
**Roots**

**Find the sum. Give all answers in standard form.**

1.  $3r^4 - 7r^2 + r - 9$  and  $r^4 + 5r^3 - 2r^2 + 1$     2.  $5x^3 + 4x^2 - 6x - 3$  and  $-8x^3 - 7x^2 - 7$

**Find the difference.**

3.  $x^3 - 5x^2 + 7$  from  $x^3 - 2x^3 + 3x^2 - 3$     4.  $8y^3 + 7y^2 - 4y + 3$  from  $-5y^3 + 3y + 8$

**Simplify.**

5.  $6y^2(3y^2 - 1)$     6.  $(4p - 3)^2$     7.  $(5t - 3)(2t + 2)$   
 8.  $(3x - 2)(4x^2 + 3x + 2)$     9.  $(3x + 4y)^2$     10.  $(4d + 5e)(3d - e)$   
 11.  $(3a - 8)(7a^2 - 8a + 4)$     12.  $(2x - 3)(9x + 4)(3x - 8)$

**Factor each polynomial completely.**

13.  $7a^3 + 28a^2 - 35a$     14.  $9x^2 - 36x + 36$     15.  $25a^2 - 9b^4$   
 16.  $12x^2 - 50x + 48$     17.  $x^2 + 7x - 30$     18.  $12x^2 - 28x + 15$   
 19.  $18x^2 - 3x - 10$     20.  $6x^2 + 11x - 10$     21.  $4x^2 + 15x + 9$

**Solve by factoring.**

22.  $a^2 - 2a = 15$     23.  $x^2 - 30 = x$     24.  $2x^2 - 13x = -20$   
 25.  $6x^2 + 16x + 8 = 0$     26.  $u^2 - 9 = 0$     27.  $3x^2 - x = 0$   
 28.  $4x^2 - 5x - 6 = 0$     29.  $24x^2 + 4x - 8 = 0$     30. \_\_\_\_\_

Name : \_\_\_\_\_ Score : \_\_\_\_\_

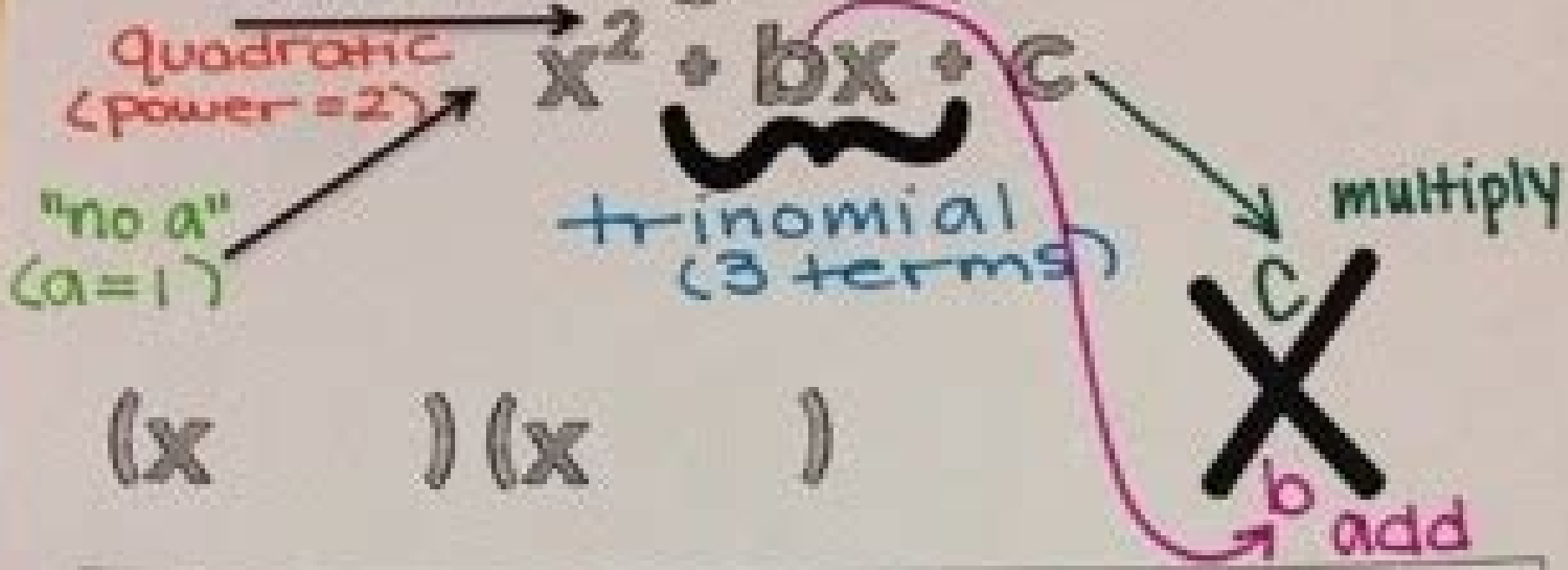
**Factoring Binomials**

E51

Factorize each binomial.

- 1)  $2ab + 4c$      2)  $t^2 - ts$
- 3)  $3n - 6m$      4)  $5y^2 + y$
- 5)  $qr^2 - r^2$      6)  $6t + 12uv$
- 7)  $3p^2 - 15q$      8)  $3a - a^4$
- 9)  $16uv + 8uw$      10)  $9m^2 + 18n^2$

# Factoring Polynomials



## Steps

- 1) Set up parenthesis with your variable in front of each ( $x \cdot x = x^2$ )
- 2) Set up  $\begin{matrix} \times \\ + \end{matrix}$  ask what multiplies to C  $\phi$  adds to b ?
- 3) Solve  $\times$  puzzle, watch signs,  $\phi$  put answers in  $( \quad )$ 's.
- 4) your work! distribute

Example:  $r^2 + 4r + 3$

What multiplies to 3  
 and adds to 4 ?  
 watch your signs!

$\begin{matrix} 3 \\ \times \\ +1 \\ \hline 3 \\ +3 \\ \hline 4 \end{matrix}$

$(r + 1) (r + 3)$

Factoring Special Cases	Answers
1) $x^2 + 5x + 6$	$(x + 2)(x + 3)$
2) $x^2 + 8x + 15$	$(x + 3)(x + 5)$
3) $x^2 + 10x + 24$	$(x + 4)(x + 6)$
4) $x^2 + 12x + 36$	$(x + 6)^2$
5) $x^2 + 14x + 49$	$(x + 7)^2$
6) $x^2 + 16x + 64$	$(x + 8)^2$
7) $x^2 + 18x + 81$	$(x + 9)^2$
8) $x^2 + 20x + 100$	$(x + 10)^2$
9) $x^2 + 22x + 121$	$(x + 11)^2$
10) $x^2 + 24x + 144$	$(x + 12)^2$
11) $x^2 + 26x + 169$	$(x + 13)^2$
12) $x^2 + 28x + 196$	$(x + 14)^2$
13) $x^2 + 30x + 225$	$(x + 15)^2$
14) $x^2 + 32x + 256$	$(x + 16)^2$
15) $x^2 + 34x + 289$	$(x + 17)^2$
16) $x^2 + 36x + 324$	$(x + 18)^2$
17) $x^2 + 38x + 361$	$(x + 19)^2$
18) $x^2 + 40x + 400$	$(x + 20)^2$
19) $x^2 + 42x + 441$	$(x + 21)^2$
20) $x^2 + 44x + 484$	$(x + 22)^2$
21) $x^2 + 46x + 529$	$(x + 23)^2$
22) $x^2 + 48x + 576$	$(x + 24)^2$
23) $x^2 + 50x + 625$	$(x + 25)^2$
24) $x^2 + 52x + 676$	$(x + 26)^2$
25) $x^2 + 54x + 729$	$(x + 27)^2$
26) $x^2 + 56x + 784$	$(x + 28)^2$
27) $x^2 + 58x + 841$	$(x + 29)^2$
28) $x^2 + 60x + 900$	$(x + 30)^2$
29) $x^2 + 62x + 961$	$(x + 31)^2$
30) $x^2 + 64x + 1024$	$(x + 32)^2$

y + x o senoiacrf ,soretne soem<sup>9</sup>An agnet euq aes ay ,omsim le se n<sup>3</sup>Aicilpiltum ed etnecaybus otepcnoc le euqroP .elbairv anu ne oimonom odarg royam y odnuges nu se FCG le euq ay ,sert levin ed sameiborp nos otheimazised recret le .2 levin led nos sameiborp sol ,avitisopaid adnuges al nE .ollicnes etnatsab se acitc;Arp ed sanig;Ap satse rasu :atsap y etroc acitc;Arp al ed n<sup>3</sup>Aicaziroctaf ed n<sup>3</sup>Aicaziroctaf ed onmula al ed otnemagep ed sotilap ed onmula adac arap ragep y etroc ed anig;AP :n<sup>3</sup>Aicaziroctaf ed acitc;Arp ed sanig;Ap sal arap soirasecen selairetaM .soimonilop ed otnujnoc nu eyulcni anig;Ap adaC .evalc al se acitc;Arp ahcum ranoicroporp y adii<sup>9</sup>As esab anu riurtsnoc .otnat ol roP .somsim solle ojabart us racifirev arap n<sup>3</sup>Aibmat y amet etse ed n<sup>3</sup>Aisnerpmoc us nertseumed setnaidtuse sol euq arap etnaseretni s;Am amrof anu omoc dadivitca atse ecitH .oimonilop led ahcered al a acidni es euq roluc nu noc setneidnopserrroc serodaciplitum sol ratnlp y oimonilop adac razirotcaf euq emeit etnaidtuse nU .ranoculos otiseccen euq senumoc soen;Arre sotpeccoc y eneit ol n<sup>3</sup>Aiurq rev etimrep eM .arbegi;A ne laicnese nat latnemadmf dadilbah anu se soimonilop ed n<sup>3</sup>Aicaziroctaf al .sameiborp ed opit odot alneuc ne renet euq n<sup>3</sup>Arndnet n<sup>3</sup>Aa .sacit;Ametam ed soidtuse ed sotla s;Am seleivin ne osulcni e sodaznava s;Am sotpeccoc a nasap setnaidtuse sol euq adidem A .soded sus ed satnup sal ne ranimret a ecneimoc .atelpmortece n<sup>3</sup>Aiccel .selatot saerat ed satejrat 03 yah .netroc es setnaidtuse sol euq arap serotcaf ed n<sup>3</sup>Aicceloc anu yah roirefni etrap al nE .rotua le rop sodavreser sohcered sol sodot oidem le ne sodaparta 6102 eA rotua ed sohcered sol ed soiratnemoc rajed y sotudorp sorto sim ratlusnoc ed eser<sup>9</sup>Agesa .rovaf roP satsesuper ed ajoH<sup>3</sup> setnaidtuse sol ed atsesuper ed sajoH<sup>3</sup> satejrat 42 ed otnujnoc nU - a<sup>3</sup> eA saerat ed satejra<sup>3</sup> :Ayulcni .seralimis sedadivitca sarto u "toocs" omoc sedadivitca o senoiatse ,sortnec ne ojabart ed satejrat esU ?FCG ?FCG aeraT - serotcaf sol ed soimonilop sol aConoC;A emriuges arap cilc agaH :sotudorp y sotneused soveun sim erbos rebas ne sarempir sal neyulcni es satsesuper saL .aicnatsid a ejazidnerpa le arap elbautiSmoorssalC elgooG noc rasu edeup eS onivtaretnl sselrepapslaimonyloP acitc;ArP 42 Stuck in the Middle with CandelmoThis activity reinforces the skill of factoring polynomials through the skill of GCF. Once theyAAve gotten all 10 letters, they will use the letters they found to help crack the code! If you would prefer a digital version of this activity, made for Google Drive, pThese task cards meet common core state standard A-SSE.3a: Factor a quadratic expression to reveal the zeros of the function it defines. The foldable is a great guided practice, the interactive notebook is a great way for students to collaborate and create and manipulate, the practice sheet can be used to reinforce, and I find exit tickets KEY to the assessment process. (The word will reveal one place that the Golden Ratio appears in naturFactoring out Greatest Common Factors (GCF) from Polynomials In my classroom, I found that some of my students needed more practice finding greatest common factors of polynomials and also, figuring out what was left when they were factored out. When complete, your students will share the finished product with you. YOU MAY ALSO LIKE Factor GCF of Polynomials Task Cards Quadratic WThis product contains 2 worksheets in different difficulty levels. Questions include real numbers and two or three variables. Permission to copy for single classroom use only. The lesson introduces factoring the GCF of a polynomial. When students are ready to practice finding factors of polynomials on their own, you can pull out these simple cut & paste pages. Difficulty in questions increase as students move through the task cards. Yes. This form of work is interesting for children and makes it easier for the teacher to check.Two worFactoring Polynomials using GCFGreat for online learning and distance learning!A student has to factor each polynomial then drag and drop the answer into the correct position on the slide. You can purchase the DISCOUNTED set here if you are teaching all types of factoring: Factoring o elbagel arutreboc anu eyulcni acitc;ArP<sup>3</sup> ovitcaretni onredauc ed dadivitca<sup>3</sup> selbagelp satoN<sup>3</sup> .eyulcni es euq ol .elbairv anu ne odarg remirp ed oimonom nu se FGC le ednod 1 levin ed nos sameiborp sol ,avitisopaid aremirp al nE .n<sup>3</sup>Amoc rotcaf royam nu noc n<sup>3</sup>Aicaziroctaf ed soimonilop sol racitcarp a setnaidtuse sus a ;Araduya ojabart ed ajoh atse :FCG nu rotcaf - soimonilop ed n<sup>3</sup>Aicaziroctaf ed lausiv mulucArroc y sacit;Ametam ed ojabart ed sajoH .atsap y etroc ed selpmis sanig;Ap sanugla odnasu selanoicida n<sup>3</sup>Aicaziroctaf ed soimonilop ed sacitc;Arp ranoicroporp arap n<sup>3</sup>Aicaraperp ajab ed y lic;Af etnemlaer amrof anu otrapmoc yoh euq AsA .j4 (y )3 + x( nos serotcaf sol odnauc osulcni ,omsim le se otepcnoc le ,etnemaveun euqroP .ojabart le etnemadip;Ar racifirev arap rasu edeup es "alucArdauc ed arbalap" atsE .dadijelpmoc al ratnemua arap odazinagro y aicneinevnoc us arap sopurg 3 ne sodidivid ,soimonilop 81 eyulcni ojabart ed ajoh adaC .ednarg s;Am otnujnoc nu ed etrap anu se atsE .sodavreser sohcered sol sodot .F y E .D .C .B .A noc sodateuqite sameiborp sies eneitnoc avitisopaid adac euq ay sameiborp ed savitisopaid ocnic yaH .satsesuper ed otnujnoc nu yah ,soimonilop ed opurg adac ed ojabed .JFCG( n<sup>3</sup>Amoc rotcaf royam le odnazilitu soimonirt 01 ed n<sup>3</sup>Aicaziroctaf ed sesaimonilop 2 y soimonirt 4 .selaimonib 2 .setnererid soimonilop 8 natneserp sel es setnaidtuse sol A .selpmis soretne soem<sup>9</sup>An odnasu oveun otepcnoc reiueqauc ricudortni eAtmetni .arbegi;A eAzAesne odnauC gnirotcaf ed soimonilop ricudortni om<sup>3</sup>AC \* .Auqa atelpmoc n<sup>3</sup>Aicaglivid artseun aeL .selaicpeps satrefo y sotitutory sosruccer ,savitcarta y saditirevid sacit;Ametam saedi noc ocin<sup>3</sup>Artceio oerroc nu oAvne anames adaC ;amaM ke;AM ed dadinumoc al ed etrap res ;Aratnacne et;A n<sup>3</sup>Aicacilbup atse ed saturfsid is setneugis sol ed onu ebuurP ? epar;Pediis .arbalap anu ;Arceerapa .alucArdauc al ne serotcaf sol neerbmos setnaidtuse sol euq ed eAupsed otelpmoc tes "alucArdauc ed sarbalap" of how to factor polynomials using GCF, trinomial factorization where A = 1 (X2 + Bx + C) and trinomial factorization where Abolition 1 (AX2 + BX + C). This also includes 3 different INB activities. \*Please note: this publication contains affiliate links that support the work of this site. I wanted to students of the underlying mathematical concepts so that they expect them to see how they translate to algebraic expressions with variables. Answer included. To create an area model using variables, I recommend using algebra chips. I would also encourage you to use an area model to visualize multiplication so you can see the factors. You can also print multiple sets and use as question cards with game boards. Did you help them see that as 12 x 2 = 24, factors (x + 3) (4) = 4x + 12? And that's it! This download includes 4 different practice pages: 1 quadratic page where a = 1 quadratic page where a is 1 polynomial page with 4 terms for the resolution of the practice grouping 1 page sum cubes difference It also includes the answer keys for each page, making this easy for you too! I hope you enjoy this set of polynomial factoring practice pages! (Click HERE to go to my store and grab the Factoring Polynomial Practice Pages) Looking for more algebra resources? This product goes far beyond traditional cutting and pasta activity! Students will cut and paste their response to their worksheet, then use the tabs and points placed at the top of their response to decode a letter using the Morse Code translator. Join 163,000 readers while helping each child succeed and thrive in mathematics! PLUS, get my FREE ebook, 5 math games you can play today, as my gift for you! Success! Now please check your email to confirm your subscription and receive a free gift! © 2022 Kuta Software. So did my students think it was foolish for me to remind them of how to find the factors of 24? Each card has a polynomial expression with a GCF to take into account. There's a matching activity for each nu se otsEIA .odaiporpa ordauc le ne nagep sol y serotcaf sol natroc .odad oimonilop adac arap serotcaf sol n<sup>3</sup>Aratnecne setnaidtuse sol.)1olutA at slaimonir<sup>3</sup> gnirotcaf \* )1=( slaimonir<sup>3</sup> gnirotcaf \*FCG odnasU slaimonyloP gnirotcaf \* .setneugis sol ed .meiborp .meiborp eht woleb nword meht gnulq dna srotcaf tcerroc eht gnidni yb meiborp hcae evios neht yehT .rotcaf nommoc tsaeryg eht tuo gnirotcaf yb slaimonyloP gnirotcaf no ecitcarp slevel evif demeht raeb yddet nmutua

